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A.M.A. Session · NEW YORK · June 10-14, 1940

August "Surgical Clinics"

On page 3 of this Journal you will find the complete contents of the August Number of the *Surgical Clinics of North America.* Even a single glance at this list of Clinics will convince you that this is undoubtedly one of the most practical and helpful numbers ever issued in this series of *books on new surgery.* It comes from the Mayo Clinic and contains *12 decidedly practical clinics* that deal with many of today's most pressing problems of the surgeon and the physician; and in addition an unusually excellent Symposium on Gallbladder and Bile Duct Diseases.

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ANOMALIES OF THE LUMBOSACRAL ARTICULATIONS

CHAIRMAN'S ADDRESS

RAYMOND G. TAYLOR, M.D.

LOS ANGELES

The fifth lumbar vertebra shows more anomalies than any other vertebra in the body. The commonest ones have to do with the transverse processes and the articulations.

The transverse processes show a great variety in structure. They may be short, almost rudimentary, long and slender, or broad and massive. The latter, in varying degree, constitute one of the most common anomalies. The transverse process and the whole lateral mass may articulate with the sacrum (so-called sacralization of the fifth) or may be actually fused with the sacrum. This may be either unilateral or bilateral.

Roentgenograms of the lumbosacral region, made in the usual anteroposterior and lateral projections, show in some cases the fifth lumbar joints in a fairly satisfactory manner. In others no joint detail can be seen. The difference in structure of the joints of different patients is the reason for the difference in the radiographic appearance.

The articular facets are normally crescentic and the superior pair is slightly hollowed out and cuplike, the surface of the inferior facets being slightly convex to fit into the concavity of the facets of the vertebra below; normally they face laterally and slightly obliquely, the anterior borders of the joint surfaces being slightly closer together than the posterior borders. This results in the superior pair of articulations forming a converging aperture or space into which fits the inferior set of articulations on the vertebra above as a wedge. The weight on the vertebra above naturally shifts this vertebra forward as well as downward and tightens the wedge, narrowing the joint spaces and limiting side motion. The lumbar vertebrae in most backs will follow this pattern, with the exception of the fifth lumbar. The superior pair of joints of the fifth are generally of this type, but the inferior pair that articulate with the sacrum show wide variation in the direction the joint faces.

There are two main variations and they are relatively frequent. In addition to the conditions described, which one may say are approximately normal and give a stable back, each pair may face directly anteroposteriorly. The weight of the body above on the superior pair then causes the joints to approximate and limits forward motion, but lateral motion is limited only by the integrity of the soft tissues, joint capsules, ligaments and muscles.

A second variation, not so common as the other, shows the joint faces resting directly one above the other, facing in a caudad-cephalad direction. This is the more unstable, of course, as there is no bony limitation in any direction.

Then there may be a combination of any of these three types of joints. A combination of any of these, with the lateral oblique on one side and either the anteroposterior or the caudad-cephalad on the other, results from a mechanical standpoint in a type of structure that is obviously unsuitable for certain types of motion and strain and the integrity of which necessarily depends not only on the bony structure but largely on the soft tissues, ligaments, joint capsules and muscles.

While it is true that the routine anteroposterior and lateral roentgenograms of the lumbosacral region may give very little actual information as to the condition of the joints, they do give one a good idea as to their abnormal facing. If these joints face laterally in the sagittal plane or slightly obliquely, a fairly good view through the joints can be had. If they face caudad-cephalad, which is rather uncommon but is seen occasionally, also a view through the joint may be had. If they face anteroposteriorly or in the coronal plane, of course no joint space is visible. This is true also if they are more than slightly oblique.

The width of the shadow on the roentgenogram of the articular process will give some idea as to the facing of the joints. When moderately oblique the processes will be moderately narrow, and when the joint surface is more nearly in the coronal plane they will be fairly broad.

So it seems reasonable to say that if one does not see through these joints in the routine type of anteroposterior roentgenogram they are abnormal as to their facing and that the wider the articular process shows in the roentgenogram the more nearly the joints face anteroposteriorly.

These deductions can be made from routine films but, to see through these joints and to learn something of their condition, lateral and oblique views must be made.

Abnormal motion in these joints does not always, but certainly may, result in damage to the joint or ligaments. As long as the joint capsule and conscious or unconscious muscular effort prevent abnormal movement, probably no damage occurs, but with the protection afforded by the soft tissues removed or inactive, abnormal motion is a definite menace and very likely to do damage to joint strictures or even trauma-

From the Hospital of the Good Samaritan.

Read before the Section on Radiology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

tize the spinal nerves in some instances. Under ordinary conditions the movement in these joints is probably slight, but with the patient standing in an awkward position and placing too great a strain on these joints, or being caught off guard with relaxed muscles and subjected to sudden unexpected strain, enough movement is possible either to damage the synovia or to strain the ligaments, and he gets as a result an acute back pain varying in severity from mild continuous discomfort to sudden, sharp, shocklike pain, which may cause him

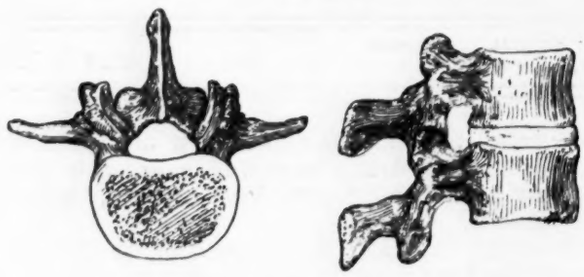

Fig. 1.—Normal facing of articular facets.

to drop in his tracks. With proper rest and the usual treatment the injured structures recover and pain subsides, leaving no trace so far as the roentgenogram is concerned. However, repeated damage to the same structure may sooner or later produce fibrous changes, scar tissue and in many instances calcium deposit in the injured tissues, which may then be definitely visible in the film.

There is some material in the literature regarding the anomalies of the fifth lumbar vertebra. Orthopedists are as a rule familiar with these conditions. Astonishingly enough, industrial surgeons and radiologists seem to give them scant consideration.

In 1920 Goldthwait [1] stated, in relation to back strain and pain, that an anatomic study usually indicates the reason for the pain. He enumerated various conditions due to anomalies, such as the transverse process of the fifth vertebra impinging on the sacrum or the spinous processes impinging on one another. He states that

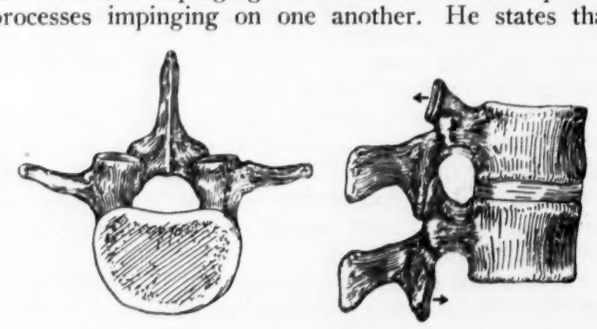

Fig. 2.—Articular facets facing in coronal plane.

sacralization on one side results in a different degree of mobility on the two sides; that a crescentic or normal facet on one side and a flat one on the other will give different degrees of movement.

O'Reilly [2] in 1927 listed the abnormalities of the fifth lumbar vertebra, not mentioning the anomalies of facing in the facets but concluding from a study of 150 specimens of sacrums and fifth lumbar vertebrae that the articular processes show great variation in structure, and slipping might occur readily.

In 1929 Willis,[3] giving percentages of anomalies, gave none for the lumbosacral joints. At that time he thought that no definite normal had been determined for them but said that anomalies of structure and asymmetry suggest mechanical instability and susceptibility to ligamentous injury. They were of frequent occurrence and clinical importance.

Hubeny [4] in 1931 described an oblique projection of the lumbar spine showing views through or between the joint facets. These, he suggested, showed arthritic deposits, effects of settling and impingement.

In 1932 Williams,[5] in stressing the diagnostic importance of loss of or of thinning of the intervertebral disks, stated that the plane of the articular facets is undoubtedly a factor in determining the direction in which the subluxation (due to the thinning of the disks) which he describes takes place. He calls attention to the fact that the foramen of the fifth lumbar is smaller than those of the vertebrae above, and any decrease in size may produce compression symptoms in the nerve.

Brown [6] in 1932 described in considerable detail the movement in these joints and stated that their anomalous development gives them a small factor of safety motion with a definite potential of injury.

Goldthwait [7] in 1933 stated that muscular strains and fascial tears do occur but are rare and easily recognized.

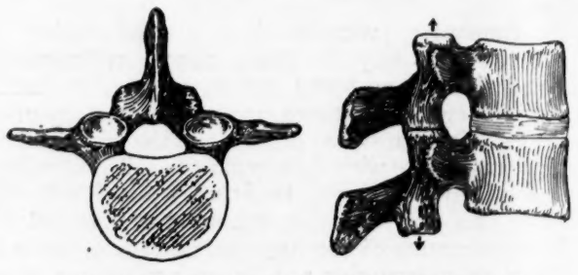

Fig. 3.—Articular facets facing caudad and cephalad.

The chief problem deals with the mechanism of the joints. He described these joints as vertical, transverse, flat and crescentic. He stated that lumbosacral joint strains are by far the most common cause for backache.

Ghormley [8] in 1933 stated that these are the only true joints of the spine, that the cartilage may undergo degeneration with eburnation of the underlying bone, accounting for the density and spur formation frequently seen in the roentgenogram. Injury to the facets can cause sciatic pain and lumbosacral pain with or without sciatic pain. He then called attention to the use of oblique views.

In 1934 the oblique view was elaborated on by Ghormley and Kirklin.[9] They drew attention to the facts that the articulations make up a considerable portion of the margins of the intervertebral foramens. They regard these joints as true joints having perceptible motion. They believe that they have not been

1. Goldthwait, J. E.: Variations in the Anatomic Structure of the Lumbar Spine, J. Orthop. Surg. **2**: 416 (July) 1920.
2. O'Reilly, A.: Abnormalities of the Lower Part of the Back, J. A. M. A. **89**: 1128-1131 (Oct. 1) 1927.
3. Willis, T. A.: An Analysis of Vertebral Anomalies, Am. J. Surg. **6**: 163-168 (Feb.) 1929.
4. Hubeny, M. J.: Oblique Projection in the Examination of the Lumbar Spine, Radiology **16**: 720-724 (May) 1931.
5. Williams, P. C.: Reduced Lumbosacral Joint Space: Its Relation to Sciatic Irritation, J. A. M. A. **99**: 1677-1682 (Nov. 12) 1932.
6. Brown, L. T.: Conservative Treatment of Backache, J. Bone & Joint Surg. **14**: 157-164 (Jan. 2) 1932.
7. Goldthwait, J. E.: Backache, New England J. Med. **209**: 722-729 (Oct. 12) 1933.
8. Ghormley, R. K.: Low Back Pain, with Special Reference to Articular Facets, with Presentation of Operative Procedure, J. A. M. A. **101**: 1773-1777 (Dec. 2) 1933.
9. Ghormley, R. K., and Kirklin, B. R.: The Oblique View for Demonstration of the Articular Facets in Lumbosacral Backache and Sciatic Pain, Am. J. Roentgenol. **31**: 173-176 (Jan.) 1934.

sufficiently considered in the causation of back pain and that symptoms are more likely to be due to actual joint injury than to ligamentous strain or injury, although the latter is possible. Their belief is that the injury sets up muscular spasm, forcing the injured joint surfaces into contact, with increased pain. This may be followed by considerable swelling and effusion, which may encroach on the lumen of the intervertebral foramen, resulting in nerve pressure and its concomitant pain.

Brailsford [10] in 1934 stated that the articular facets of the lumbosacral joints show great variability in their shape and in the plane of their articular surfaces. He evidently was not familiar with the oblique views, as he states that, if the facets face backward or are in the coronal plane, no idea of the condition of the surface of the joint can be obtained from a roentgenogram. He calls attention to the facts that the surfaces are generally vertical, but this is not always the case; that a considerable percentage of them are asymmetrical, and that the asymmetry favors abnormal movement which may cause strain on the ligaments.

Kimberley [11] in 1937 called attention to the fact that the lumbar vertebral articulations are in the sagittal plane, except at the fifth lumbar vertebra, where they may range from sagittal to coronal. He believes that the latter allow more rotation and lateral motion, as well as extension and flexion, but at the expense of stability. He thinks that it is rare to find a patient with low back pain who has symmetrical sagittal joints, and when asymmetry exists, movement on one side must be eccentric to the other, and trauma with synovitis and arthritis can readily be produced. The muscles attempt protection by going into tonic spasm, causing more fatigue and tenderness. A partial subluxation may take place with locking, which may account for cases in which there is sudden pain and perhaps a snap with also sudden relief, which may occur spontaneously or as a result of manipulation.

From these brief extracts from some of the articles in the American literature it should be fair to assume

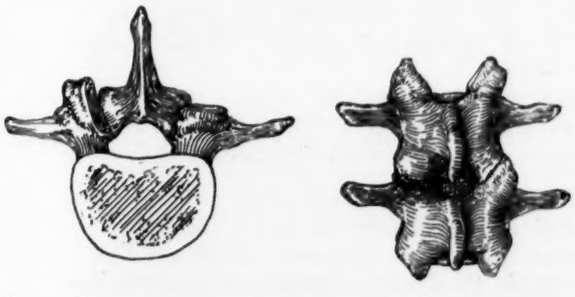

Fig. 4.—Combination of normal and coronal facing of articular facets.

that anomalies of the joints are common, that they give improper support to the body structures and are deficient in their weight bearing and strain resisting properties, and that the defects or anomalies allow damage to the joints and to their soft tissue supports, thereby being a fairly common and important cause of pain.

The majority of these backs show no marked pathologic changes of the bones. However, when abnormalities are present—and with good roentgenograms they can be seen and recognized—one has a possible clue to the cause of the acute symptoms. If other causes, such as true infectious arthritis, synovitis, actual strain or rupture of fibers of the muscles of the back or actual fracture, are eliminated and anomalies of the joints are shown to be present, the latter are certainly in line for consideration as a potential cause of the injury and accompanying symptoms, especially when the history definitely connects the beginning of the symptoms with unusual strain, such as heavy lifting, violent muscular effort or a fall in an awkward position.

Fig. 5.—Combination of normal and caudad-cephalad facing of articular facets.

The commonest history one hears, of course, is that of heavy lifting by working men. It isn't possible, of course, to see the acute pathologic condition in the roentgenogram, but the mechanical setup for an injury of this kind can be observed and gives one a clue to its causation.

My purpose in calling attention to this matter is not that it is new but that I have been astonished to find that these anomalies are to a large extent ignored in radiologic reports. I have been observing these variations in the lumbar spine for a good many years and have been definitely calling attention to them in my radiologic reports for at least fifteen years.

It is obvious that most persons who have backs showing these anomalies are rather unsuited to hard manual labor such as lifting and straining. That they are more liable to injury than others with normal articular facets would seem reasonable. Any one who does a large volume of industrial work in which routine examinations of the lower part of the back in patients suffering from back strain are made will at once be struck by the large number of patients showing these anomalies. It would seem obvious that radiologic reports should call attention to these conditions.

1212 Shatto Street.

10. Brailsford, J. F.: Radiology of the Bones and Joints, Baltimore, William Wood and Company, 1934.
11. Kimberley, A. G.: Low Back Pain and Sciatica: Its Etiology, Diagnosis and Treatment, Surg., Gynec. & Obst. **65**: 195-216 (Aug.) 1937.

Prevalence of Mental Disease.—On Jan. 1, 1935, there were approximately 450,000 patients resident in the mental hospitals of the United States. During that year an additional 140,000 were admitted, so that a total of about 590,000 were resident in mental hospitals at some time during 1935. To express these figures in terms of the general population means that at any given time during the year about one out of every 200 adults in the general population was a resident in a mental hospital, while one out of every 150 was under care at some time during the year. For New York State and Massachusetts, where hospital facilities are more adequate than in other states, one out of 150 adults in the general adult population was a resident patient at any given time during 1936 and almost one out of every 100 adults was under care at some time during 1936. These figures represent minimum estimates, since they are based only on the hospitalized insane; not included in these figures are those mentally ill patients who are in general hospitals, homes for the aged, and so on.—Landis, Carney, and Page, James D.: Modern Society and Mental Disease, New York, Farrar & Rinehart, Inc., 1938.

BROMIDE INTOXICATION

REPORT OF FIFTEEN CASES

LEWIS P. GUNDRY, M.D.
BALTIMORE

In recent years bromide intoxication has become a relatively common condition. Hanes and Yates [1] reported 400 cases which occurred at Duke Hospital in six and one half years. Wagner and Bunbury [2] examined the blood of 1,000 consecutive patients admitted to the Colorado Psychopathic Hospital and found bromide in the serum of seventy-seven. Many reports have come from all parts of this country. However, physicians still frequently fail to recognize the rather typical toxic states produced by bromide. It therefore seemed of interest to discuss again the cause, symptoms, diagnosis, prognosis and treatment of bromide intoxication and to report fifteen additional cases. Only those patients were included who had an initial blood bromide content above 150 mg. per hundred cubic centimeters.

To determine the blood bromide content the method of Wuth [3] was used:

Ten cc. of blood was drawn from the vein and allowed to coagulate. To 4 cc. of the serum, 8 cc. of distilled water and 2.4 cc. of a 20 per cent solution of trichloroacetic acid were added. This mixture was shaken well, allowed to stand for thirty minutes and then filtered. To 6 cc. of the filtrate 1.2 cc. of a 5 per cent solution of gold chloride (Merck) was added, and a comparison was made on a colorimeter with a freshly prepared standard which contained either 100 mg. or 250 mg. of sodium bromide per hundred cubic centimeters.

All blood bromide levels given in the subsequent discussion are in milligrams of sodium bromide per hundred cubic centimeters of serum.

ETIOLOGY

When bromide is ingested it is eliminated rather slowly. Because bromide is less readily eliminated by the kidneys than chloride there is a tendency for it to accumulate in harmful amounts. Furthermore, since the output of bromide is increased by the ingestion of chloride, intoxication will occur more readily when the intake of chloride is restricted. This fact is illustrated clearly by an early case cited by Hashinger and Underwood: [4] a druggist's servant filled the salt cellars with sodium bromide, and a toxic psychosis developed in every member of the family.

Bromide intoxication has been encountered most often in patients with a psychoneurosis, a psychosis, chronic alcoholism, cerebral arteriosclerosis, brain tumor or other organic disease. The patients commonly complain of headache, nervousness or symptoms of insomnia, for which the average physician prescribes bromides with alarming frequency. It is not surprising therefore that physicians' prescriptions have caused approximately 50 per cent of the reported cases of bromide intoxication. Repeated refilling of a prescription which calls for a moderate dose of bromide may eventually result in poisoning. On the other hand, the patient may totally disregard instructions and take large frequent doses:

CASE 1.—A young man who had been drinking heavily went to his physician for treatment. The physician prescribed bromide in a dose of 15 grains (1 Gm.) four times daily, but the patient took at least twice this amount. There developed a severe intoxication, which necessitated hospitalization.

The patient with chronic alcoholism is particularly prone to develop bromide poisoning, since he has a low chloride intake and in addition is usually dehydrated. Furthermore, it is a well known fact that such patients frequently take excessive doses of any medication. Several patients in this series literally substituted bromide solutions for alcohol at the end of a spree:

CASE 2.—A garage mechanic aged 42 after a spree of several months' duration found himself in the custody of a friend who was a strict prohibitionist. He promptly shifted from whisky to a prescription which contained bromide, and after he had consumed several bottles of this in a few days had moderately severe intoxication with mental symptoms which made hospital treatment imperative.

Several similar cases were encountered in this series, in all of which the intoxication developed rapidly as a result of large doses. Cross [5] has warned of the danger of prescribing bromides for the patient with chronic alcoholism. In my opinion bromide should never be prescribed in the treatment of chronic alcoholism unless the patient is kept under close observation and the drug administered either by a nurse or by some equally responsible person.

Frequent references were found in the literature to cases in which bromide poisoning resulted from proprietary medicines. Such medicines, used indiscriminately, caused the intoxication in two of the cases here reported:

CASE 3.—A woman aged 71 had taken several doses of bromo-seltzer daily for at least ten years. She became ill, with many paranoid hallucinations. The blood bromide content was 212 mg.

CASE 4.—A young married woman took 30 ounces (900 cc.) of neurosine in five days. There rapidly developed a severe toxic psychosis, from which she recovered in three weeks.

Anemia and arteriosclerosis are repeatedly mentioned as contributory causes. The patient who took bromo-seltzer had advanced arteriosclerosis. Patient 13 (table 1) showed marked arteriosclerosis, to which her slow recovery was largely attributed. In the case which follows anemia was a prominent feature:

CASE 5.—A druggist aged 57 had insomnia and had taken uncertain doses of bromide for one year. On admission to the University Hospital he was drowsy, pale and confused mentally. The blood bromide content was 413 mg., the hemoglobin content was 66 per cent and the red cells numbered 3,680,000. He made a satisfactory recovery in four weeks. The anemia apparently arose from an inadequate diet.

Finally, it is well known that the state of bodily health may determine whether or not intoxication will occur in a given instance. Barbour [6] gave large doses

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Read before the joint meeting of the Section on Practice of Medicine and the Section on Pharmacology and Therapeutics at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 19, 1939.

1. Hanes, Frederic M., and Yates, Anne: An Analysis of Four Hundred Instances of Chronic Bromide Intoxication, South. M. J. **31**: 667 (June) 1938.
2. Wagner, Carl P., and Bunbury, D. Elizabeth: Incidence of Bromide Intoxication Among Psychotic Patients, J. A. M. A. **95**: 1725 (Dec. 6) 1930.
3. Wuth, Otto: Rational Bromide Treatment: New Methods for Its Control, J. A. M. A. **88**: 2013 (June 25) 1927.
4. Hashinger, Edward H., and Underwood, Charles C.: Bromide Intoxication, J. Kansas M. Soc. **36**: 183 (May) 1935.
5. Cross, W. D. S.: Bromide Intoxication, Canad. M. A. J. **35**: 283 (Sept.) 1936.
6. Barbour, R. F.: Bromide Intoxication, Proc. Roy. Soc. Med. **29**: 1391 (Sept.) 1936.

of bromide to six healthy controls with no ill effect. All the patients discussed in this paper were in poor health.

In nine of the fifteen cases here reported (table 1), bromides were prescribed by physicians. In two instances the patient had taken a proprietary medicine. Chronic alcoholism was the underlying condition in eight cases; in one of these there was also a psychosis. Psychoses (one toxic and one with cerebral arteriosclerosis) were present in two others; in two there was a psychoneurosis. The remaining three were cases of anemia, eczema and brain tumor, respectively. The last-mentioned case was of special interest because the seriousness of the underlying condition was not recognized during the period of treatment for bromism:

CASE 6.—A man aged 58 had complained of headaches for several months. On admission he showed thick speech, unsteady gait and a blood bromide content of 350 mg. Neurologic examination gave no evidence of a localized lesion. An examination of the fundi, a roentgenogram of the skull and a spinal puncture gave no positive information. He improved but was not well on discharge from the hospital. There was no further improvement, and after a few months bilateral choking of the disks developed. An exploratory craniotomy revealed a brain tumor. The patient was comatose at this time and died a few days later.

TABLE 1.—*Fifteen Cases of Bromide Intoxication*

Case	Sex	Age, Yr.	Source of Bromide	Underlying Condition	Level of Sodium Bromide in Serum on Admission, Mg./100 Cc.	Physical and Neurologic Signs	Length of Stay in Hospital, Result
1	♂	31	Physician's prescription	Chronic alcoholism	454	Speech thick and incoherent, pupils inactive to light, tongue coated, reflexes not elicited, broad base gait	28 days; cured
2	♂	42	Self medication	Chronic alcoholism	295	Thick speech, coated tongue, weak legs, diminished knee jerks, very poor coordination, unsteady gait	21 days; cured
3	♀	71	Self medication, bromo-seltzer	Senile psychosis, generalized arteriosclerosis	212	Dusky cyanosis, coated tongue, large heart, generalized arteriosclerosis	Cured of bromism, psychosis remained
4	♀	32	Physician's prescription, neurosine	Chronic alcoholism	357	Coated tongue, hyperactive knee jerks, poor coordination, unsteady broad base gait	22 days; cured
5	♂	57	Self medication	Anemia	413	Pale mucous membranes, thick speech, coated tongue, rash on forearms, diminished knee jerks	24 days; cured
6	♂	58	Physician's prescription	Headaches, brain tumor	350	Thick speech, sordes, retinal arteriosclerosis, hyperactive reflexes	13 days, improved; died several months later of brain tumor
7	♂	58	Self medication	Psychoneurosis, bronchial asthma	182	Coated tongue, malnutrition, musical rales at bases of lungs	No marked change; transferred
8	♀	35	Physician's prescription, bromide and chloral	Chronic alcoholism	715	Speech thick, dehydrated pupils sluggish to light, tongue coated, tachycardia, legs very weak, coordination very poor	Cured, 3-4 weeks (no more data)
9	♂	35	Physician's prescription	Chronic alcoholism	223	Maculopapular eruption, coated tongue, large liver, absent knee jerks, poor coordination, unsteady gait	5 days; cured
10	♂	34	Self medication, triple bromides	Chronic alcoholism plus psychosis	398	Thick speech, pupils inactive to light, coated tongue, rales at bases of lungs, absent knee jerks, poor coordination	Recovered from psychosis, 11 months
11	♀	40	Self medication	Chronic alcoholism, essential hypertension	500	Thick incoherent speech, dirty teeth, coated tongue, reddish macular skin lesions, tachycardia, rales at bases of lungs, very poor coordination, unsteady broad base gait	42 days; cured
12	♀	45	Physician's prescription	Chronic alcoholism	196	Thick speech, eruption on back and neck, coated tongue, diminished knee jerks, ataxic broad base gait	10 days; cured
13	♀	74	Physician's prescription	Diabetes, eczema with pruritus	500	Thick speech, puffed face, generalized eruption, rales at bases of lungs, coarse tremor, overactive knee jerks	34 days; cured
14	♀	21	Physician's prescription	Psychosis	168	Heavily coated tongue, poor coordination	Cured; recovered from psychosis, 5 months
15	♀	41	Physician's prescription	Psychoneurosis	555	Thick speech, masklike face, weak legs, ataxia coarse tremor	15 days, recovered, at home

SYMPTOMS

In any discussion of the symptoms of bromide intoxication it must be remembered that these symptoms are usually superimposed on those of an underlying neuropsychiatric or organic physical condition. As Diethelm [7] has pointed out, the mental symptoms are colored by the personality of the patient. For example, the patient with dementia praecox and bromide intoxication would still have psychotic symptoms when there was not a trace of bromide in his blood. Delirium has been noted at a much lower concentration of blood bromide in the high-strung unstable person than in the normal person. This fact is well illustrated by the following case:

CASE 7.—A salesman aged 59 had been peculiar, with many functional symptoms, for years. Under stress of family difficulties he took large doses of bromide and reacted with a confused, semidelirious, paranoid mental state. The blood bromide content was 182 mg. In spite of the mild nature of the intoxication, recovery was slow.

Headache, anorexia, dizziness, tremors, fatigue, irritability, poor memory and transitory mental confusion have been noted frequently as early symptoms. Several of these symptoms were usually found in cases in which there was a blood bromide content between 50 and 150 mg. Mental manifestations were either evanescent or entirely lacking in such mild intoxications.

If the bromide medication was continued or (as often happened) the dose was increased in an attempt to overcome the symptoms of mild intoxication, restlessness, weakness, thick speech and unsteady gait became clinical features. Patients were fearful and anxious, with frequent emotional outbursts. There were aural and visual delusions and hallucinations. In some cases delirum was a feature, although Curran [8]

7. Diethelm, Oskar: On Bromide Intoxication, J. Nerv. & Ment. Dis. **71**: 151 (Feb.), 278 (March) 1930.

8. Curran, Frank J.: A Study of Fifty Cases of Bromide Psychosis, J. Nerv. & Ment. Dis. **88**: 163 (Aug.) 1938.

reported that pure delirium was rare. Such symptoms usually occurred with a blood bromide content of from 150 to 250 mg.

When the blood bromide content exceeded 250 mg., the clinical picture was dominated by the symptoms characteristic of a toxic psychosis. The patient was often uncooperative, noisy and even actively combative. The mood varied from elation to abject fear or terror. The speech was usually thick and jumbled; it was slurred to such an extent as to be almost unintelligible in some cases. There were many delusions and hallucinations; the patient frequently carried on confused conversations with imaginary persons on the ceiling or saw large men and animals of all descriptions. He frequently believed that he was to be executed or that some members of his family had been killed. Complete disorientation was often observed, and defective

TABLE 2.—*Relation of Blood Bromide Content to Mental Status*

Case	Sodium Bromide in Serum on Admission, Mg./100 Cc.	Mental Status	Sodium Bromide in Serum: Mg./100 Cc.	Sodium Bromide in Serum: No. of Days Later	Mental Status at That Date
1	454	Combative, suspicious, fearful, hallucinated, semistuporous, delirious	135	11	Practically normal
2	295	Combative, anxious, fearful, hallucinated, lethargic, delirious	105	14	Normal
4	357	Confused, fearful, hallucinated, confabulatory, drowsy	158	8	Normal
5	413	Confused, dull, irritable, hallucinated, lethargic	133	14	Normal
6	350	Confused, hallucinated, disoriented	200	13	Still confused at times
10	398	Combative, suspicious, fearful, hallucinated, delirious	133	14	Underlying psychosis, no toxic symptoms
11	500	Confused, anxious, fearful, hallucinated, semistuporous, delirious	85	19	Normal
12	196	Confused, antagonistic, mildly delirious	125	5	Normal
13	500	Confused, suspicious, fearful, hallucinated, drowsy	100	33	Normal
15	555	Confused, suspicious, fearful, hallucinated, semistuporous	244	14	Still confused

memory with a tendency to confabulation was noted in several instances. In cases of such severe intoxication there was usually a lethargic or semicomatose state. As noted, delirium was at times a feature. Coma such as that which occurred in the case reported by Craven and Lancaster [9] was not encountered in this series. When the patient was comatose or semicomatose, death most commonly resulted from pneumonia. It is noteworthy in this connection that patients 10 and 11, with high initial blood bromide levels, showed congestive changes at the bases of their lungs on admission.

Low grade fever, masked facies, sordes, coated tongue, tachycardia, decreased systolic blood pressure and weakness in the lower extremities have been noted as the most prominent physical signs. In the patient with chronic alcoholism hepatic enlargement was frequently found. The associated acne-like cutaneous lesions, which have been greatly overemphasized, were not common in this series; they occurred in only four of fifteen cases. These maculopapular lesions were in no way proportionate to the severity of the intoxication; such eruptions were considered by Bailey [10] to be an allergic manifestation.

Neurologic signs which have been considered important are thick slurring speech, sluggish pupillary response to light, decreased or increased tendon reflexes, broad base gait and gross lack of coordination. Of these the slurring speech, broad base gait and ataxia were most characteristic in this series. The degree of ataxia was roughly proportionate to the severity of the intoxication:

CASE 8.—A woman aged 35 had been drinking heavily and had taken large doses of bromide prescribed by her physician over a period of three weeks. She exhibited the most marked ataxia and often missed by several feet objects she attempted to touch. The blood bromide content was 715 mg.

It has been my experience that the clinical picture with particular reference to the mental status closely parallels the level of bromide in the blood. When this level did not exceed 150 mg., there were usually no definite symptoms of intoxication. Above this level there were in most cases symptoms which became more pronounced as the concentration of bromide increased. Furthermore, under treatment these symptoms regressed; the patient was usually mentally clear when the blood bromide level had fallen below 150 mg. A casual study of table 2, which shows the relation of the blood bromide level to the mental status in this series, will serve to substantiate these statements.

DIAGNOSIS

In the diagnosis of bromide intoxication the history was not of much assistance. The patient was frequently unable to give accurate information, and the family or friends did not know about such details. However, pharmacists and other physicians proved most helpful when the question of previous medication arose.

The diagnosis then must be made mainly on the symptoms and physical signs discussed. When a patient with a toxic mental condition characterized by fearful hallucinations, disorientation and delirium is encountered, bromism must be considered as a possible diagnosis. If in addition he shows thick speech, coated tongue, broad base gait and lack of coordination, bromide poisoning should be diagnosed clinically.

As Hanes and Yates [1] have pointed out, the blood bromide determination "is an absolutely indispensable aid" in confirmation of the diagnosis. Such a determination should be done as a routine in any case of a toxic, confused mental state or in any case of coma of unexplained origin. In cases of severe bromide intoxication this test should be repeated at frequent intervals to determine the results of treatment.

The neurologic picture in bromide intoxication when accompanied by fever and a lethargic mental state makes differentiation from encephalitis a difficult problem. Syphilis of the central nervous system also offers great difficulty at times. These two conditions can be ruled out only by blood bromide determination and careful study of the spinal fluid. In cases of chronic alcoholism differentiation must be made from alcoholic hallucinosis, delirium tremens and Korsakoff's syndrome. Thick speech and poor coordination are not usually features of these alcoholic mental states.

9. Craven, E. B., Jr., and Lancaster, Forrest J.: Coma Due to Bromide Intoxication, J. A. M. A. **106:** 1383 (April 18) 1936.

10. Bailey, R. J.: Bromoderma, Proc. Staff Meet., Mayo Clin. **11:** 630 (Sept. 30) 1936.

Furthermore, there is no evidence of neuritis in cases of bromism. Finally, in cases of semicoma or coma, poisoning from barbital or some other hypnotic must be ruled out. Clinically, recovery from poisoning by bromide is much slower than that from poisoning by any of the other sedatives. However, since prompt diagnosis is important in such cases, determination of the blood bromide offers the only speedy solution of the problem.

PROGNOSIS

The mortality from bromide intoxication per se is very low. In the many hundreds of cases which have been reported in recent years, only seven fatalities have been noted; this constitutes a mortality well under 1 per cent. Most of these deaths occurred in instances of severe intoxication complicated by pneumonia. In the series here reported there were no deaths from bromism, but patient 2 has since died of chronic alcoholism and patient 6 of brain tumor.

Recovery from the symptoms of bromide poisoning requires from one to six weeks, depending largely on the severity of the intoxication. It is noteworthy, however, that an underlying psychosis was found in three of the cases here discussed and that there has been a recurrence of drinking in several of the cases of chronic alcoholism. The ultimate prognosis should therefore be reserved until the toxic symptoms have entirely abated and the underlying mental and physical condition has been carefully appraised.

TREATMENT

Preventive.—In approximately half of the cases, bromide intoxication results from physicians' prescriptions. It is therefore obvious that physicians can play a very important part in the prevention of bromism. Before bromide is prescribed the physician should be sure that the patient is getting none of this drug from other sources. Prescriptions should be marked "not to be refilled." The intake of sodium chloride should be adequate at all times. At subsequent visits the patient should be questioned concerning symptoms of mild intoxication before bromide medication is continued. Whenever doubt arises concerning intoxication the blood bromide should be determined. Finally, the public in general and physicians in particular should be educated concerning the danger inherent in self administration of bromide or of the many proprietary medicines which contain bromide.

CURATIVE

Because chloride replaces bromide in the body and promotes its elimination by the kidneys, sodium chloride is a specific in the curative treatment of bromide intoxication. This inexpensive medication is most easily given by mouth in capsules. The dose recommended by most authors is from 4 to 10 Gm. daily; this dose was found effective in the fifteen cases reported here. It was necessary to give sodium chloride intravenously to only one patient, he having refused to take salt by mouth. There was a temporary increase in mental symptoms in three of the fifteen cases when sodium chloride was first given. This phenomenon is probably explained by increased elimination of bromide from the tissues, which exceeds renal elimination, with a resultant temporary rise in the level of blood bromide. Because of this paradoxical possibility, Wagner and Bunbury [2] advised that sodium chloride be withheld at first in cases of severe intoxication. An interesting observation in this series was the excellent cooperation of the patients in taking the sodium chloride capsules. They seemed quickly to realize that the capsules helped them, and it was not unusual for a semidelirious patient to demand his capsules if the nurse did not administer them promptly.

Important supportive treatment consists of the forcing of at least 4,000 cc. of fluids daily, a nutritious soft diet and good nursing care. It is undesirable to restrain the patient by mechanical means, since he is thus made more fearful and restless. In addition the danger of pneumonia is greatly increased by confining the patient to bed. He is much more easily handled if he is placed in a warm room with a minimum of furniture. Special nursing is desirable in cases of severe intoxication.

The question of sedatives is an important one; the patient is most restless at times and becomes exhausted if he does not obtain sufficient sleep. Paraldehyde was used almost exclusively in the present series of cases, with very satisfactory results. The dose used was from 4 to 16 cc. given by mouth or from 12 to 24 cc. given by rectum. Phenobarbital and seconal [11] were used sparingly to reinforce the paraldehyde when necessary.

SUMMARY

1. Bromide intoxication is a common condition, and, judging from the hundreds of cases which have been reported, it is prevalent in all parts of this country.

2. In spite of its prevalence, many physicians still fail to recognize this condition.

3. The cause of bromide intoxication is most commonly a physician's prescription written for an alcoholic addict, a psychoneurotic person or a psychotic patient. If the chloride intake is low or if the patient is suffering from some debilitating disease, intoxication occurs more readily.

4. The severity of the symptoms of bromism closely parallel the elevation of the blood bromide level. These symptoms are characteristic and are found to some degree in all patients with a blood bromide content above 150 mg. per hundred cubic centimeters.

5. An alert physician should be able to make the diagnosis from the history and physical examination. The blood bromide determination confirms the diagnosis.

6. The prognosis should be guarded until the underlying condition has been studied.

7. Treatment of bromide intoxication is divided into preventive and curative. The latter is easy and satisfactory, but the former is more important for the physician to remember.

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ABSTRACT OF DISCUSSION

DR. C. C. UNDERWOOD, Emporia, Kan.: Bromide intoxication should be of interest to all physicians regardless of their specialty. Fortunately the determination of the blood bromides is relatively simple and may be done in any laboratory possessing a colorimeter, so that the suspected diagnosis of a toxic bromide state is easily confirmed or disproved. A determination of the blood bromides should always be made whenever nervous patients seem to grow worse after taking bromides for a time or else medication should be immediately stopped. In 1934 and 1935 Hashinger and I, thinking it possible that bromide determination on the spinal fluid might be a more

11. The sodium salt of propyl-methyl-carbinyl allyl barbituric acid or sodium allyl (1-methylbutyl) barbiturate.

sensitive indication of the patient's mental state, made a small number of such determinations. The spinal fluid bromide levels were usually a little less than half those of the blood bromides. The spinal fluid determinations therefore cannot be considered superior to those of the blood serum in making the diagnosis or prognosis. Twelve patients with bromide intoxication have been admitted to University of Kansas hospitals since the publication of our paper. These cases seem to show the peculiar susceptibility of cardiac and cardiorenal patients and the fact that there seems to be an idiosyncrasy on the part of certain people, some having a complete symptom complex from low concentration and others being utterly free of any symptoms from a high concentration of bromides in the blood. One of our most severely affected patients was a young married woman who had acute nephritis and was instructed to avoid meat and salt. She was given a salt substitute containing sodium bromide. There is nothing to add to the method of treatment as outlined by Dr. Gundry. I wish to emphasize the fact brought out in Dr. Gundry's paper that the patient with bromide intoxication is usually ill before the administration of bromides and that the clinician should be careful not to overlook a more serious malady after the diagnosis of bromide intoxication is established.

DR. ELMER L. DE GOWIN, Iowa City: Dr. Gundry stated that cutaneous manifestations were not common in patients with bromide intoxication. I wish to elaborate on this observation. Dr. L. W. Kimberly of the Department of Dermatology of the State University of Iowa has allowed me to summarize the results of some unpublished studies he made on this point. Of thirteen patients with acute bromism and mental symptoms, with plasma bromides between 57 and 562 mg. per hundred cubic centimeters, only one had cutaneous manifestations. A study of sixteen patients with bromoderma in whom the blood bromides were in general lower revealed no correlation between the level of bromides in the blood and the occurrence of the cutaneous lesions. Occasionally the bromoderma disappeared while the bromide level of the blood was still high. He then attempted to produce bromoderma by giving patients bromides by mouth. In a group of four patients who had previously had bromoderma, the cutaneous manifestations recurred in all when the blood bromide levels were relatively low. When ten patients who had never had bromide eruptions were fed bromides, no cutaneous manifestations could be produced although the blood bromide levels were higher than in the group with bromoderma and two patients became temporarily disoriented. From these data Kimberly concluded that the cutaneous manifestations are the result of idiosyncrasy to the drug. When patients had a constant intake of sodium chloride and sodium bromide, great individual variation in the bromide levels of the blood resulted. Ingestion of 1 Gm. of sodium bromide produced plasma bromide levels from 0.46 mg. to 5.8 mg. per hundred cubic centimeters in different individuals. The effect of the administration of sodium chloride on the blood bromide level also was studied. It was found that the daily injection of 200 cc. of 2 per cent sodium chloride intravenously produced a more rapid fall in blood bromides than did the oral administration of salt.

DR. LEWIS P. GUNDRY, Baltimore: The point Dr. Underwood brought out is a very good one, that all physicians in all types of practice will see these patients with bromide intoxication. Of the fifteen cases here reported, most of them were seen by general practitioners; a good many of them were produced by general practitioners. Dr. De Gowin stressed the scarcity of cutaneous lesions. That was borne out by the cases reported here. He also mentioned the fact that there is no relation of the blood bromide level to cutaneous manifestations. The patient in this series who had 715 mg. of sodium bromide per hundred cubic centimeters had no trace of a cutaneous lesion. Others whom I have seen with blood bromides of 100 and 120, ordinarily not considered toxic levels, had a rather marked acne-like eruption characteristic of bromide, sometimes called a bromide rash. Also there are great individual differences in patients in their susceptibility to bromide intoxication. I would again stress the point that at least 50 per cent of these cases are caused by physicians' prescriptions. I think we should continue to use bromides, but I think we should use them with considerably more caution than has been the case in the past.

VARIOUS COMPLEMENTARY FEEDINGS USED DURING THE NEONATAL PERIOD

EFFECT ON THE GAIN IN WEIGHT AND THE STIMULATION OF BREAST MILK

HEYWORTH N. SANFORD, M.D.

CHICAGO

The problem of adequate feeding for the infant during the neonatal period has been discussed for many years. The fact that almost every hospital has a different procedure gives the impression that perhaps the various feedings may not be of such importance as one has been led to believe, i. e. that the newborn infant adjusts itself to its new environment after a certain period no matter what is done or, one might say, in spite of outside interference. To obtain an idea of the effect of various feedings, the following study was carried out.

PROCEDURE

This study was begun in January 1930 and involves the records of 4,622 infants. The newborn infant is under the supervision of the pediatric department as soon as it enters the nursery. A daily chart is kept of its weight, the food intake and the water intake. These intakes are charted separately for each feeding. When the baby is sent to breast, as it is within the first twenty-four hours in all instances, weighing before and after nursing gives the exact amount of breast milk obtained. For the first seven years of the study all the babies were fed or sent to breast six times in twenty-four hours, i. e., at four hour intervals. For the last two years they were fed and sent to breast only five times in twenty-four hours, i. e. the 2 a. m. feeding was omitted. In the first five years of the study, in which various complementary feedings were given, the infant was first sent to breast and the amount obtained was subtracted from the calculated requirement for the infant (3 ounces of fluid complement per pound in twenty-four hours). The required complementary feeding was then given, each infant being allowed to take as much as it would of the calculated feeding.

Birth Weight of Infants Studied

Year	Total No. of Infants	5 to 6 Lb. No.	%	6 to 7 Lb. No.	%	7 to 8 Lb. No.	%	8 to 9 Lb. No.	%	9 to 10 Lb. No.	%	10 to 11 Lb. No.	%
1930.....	253	24	9.5	78	31.0	78	31.0	54	21.5	17	6.5	1	0.5
1931.....	493	22	4.5	128	26.0	202	41.0	99	20.0	37	7.5	5	1.0
1932.....	587	45	7.7	153	26.0	211	36.0	129	22.0	47	8.0	2	0.3
1933.....	311	33	10.5	62	20.0	112	36.0	78	25.0	22	7.0	4	1.5
1934.....	496	45	9.0	120	24.0	185	37.0	109	22.0	32	7.0	5	1.0
1935.....	544	30	5.5	119	22.0	215	39.5	139	25.5	33	6.0	8	1.5
1936.....	582	22	3.8	146	25.0	233	40.0	128	22.0	52	9.0	1	0.2
1937.....	673	38	5.6	146	21.7	276	41.0	154	22.9	50	7.4	9	1.4
1938.....	683	25	3.5	178	26.0	266	39.0	167	24.5	37	5.5	10	1.5
Total...	4,622	284	6.0	1,130	24.1	1,778	38.0	1,057	24.0	527	7.0	45	0.9

The various complementary feedings were given for a period of one year. Five per cent of carbohydrate was used with each feeding to standardize the study. No complementary feeding was used in the last four

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years, during which two year periods were employed. The feedings were as follows:

1930. Protein Milk. The nonboilable milk in the proportion of 1 tablespoonful of protein milk to 2 ounces of water, with 5 per cent of carbohydrate (dextrimaltose No. 1).

1931. Lactic Acid Milk. Cow's whole milk, fresh, boiled five minutes, acidified with lactic acid, 3 drops to the ounce of milk, with 5 per cent of carbohydrate (dextrimaltose).

1932. Two thirds cow's milk, fresh, boiled five minutes; one third boiled water, and 5 per cent carbohydrate (cane sugar).

1933. One half cow's milk, fresh, boiled five minutes; one half boiled water, and 5 per cent carbohydrate (cane sugar).

1934. Five per cent dextrose solution.

1935 and 1936. No complementary feedings. Boiled water every four hours alternate to breast feedings, as much as the infant would take; six breast feedings in twenty-four hours.

1937 and 1938. Feedings as in 1935 and 1936, but only five breast feedings in twenty-four hours (2 a. m. feeding omitted).

RESULTS

The accompanying table shows the sex and birth weight of the babies, together with the average weights.

The loss of weight from birth was calculated for each baby from the lowest point in the weight curve in the ten day period. It was found that the easiest method of grouping these losses was by dividing them into percentage of loss as compared with birth weight. The results of the various complementary feedings are shown in chart 1, which comprises data on those infants for whom the loss of weight was 5 per cent of the birth weight or less.

Chart 2 enumerates those infants for whom the loss of weight was between 5 and 8 per cent of the birth weight; chart 3, those infants for whom the loss of weight was between 8 and 10 per cent of the birth weight, and chart 4, those infants for whom the loss of weight was 10 per cent or more of the birth weight.

The gain in weight after the initial loss was calculated for each baby. It was found that the easiest method of showing this gain was to compare the weight at the

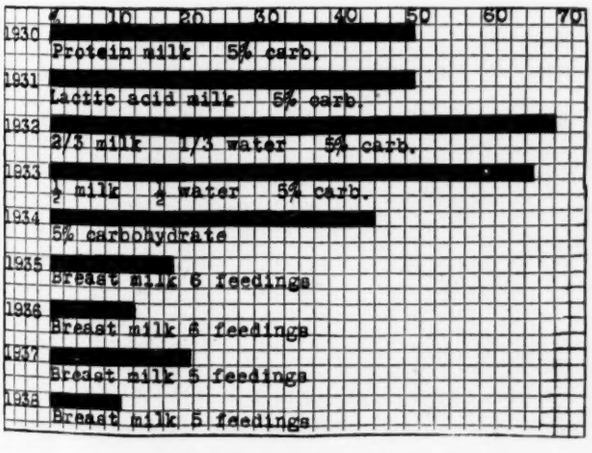

Chart 1.—Loss of weight; percentage of infants who lost less than 5 per cent of their birth weight

age of 10 days with the weight at birth. Chart 5 enumerates by yearly periods all the babies who regained or exceeded their birth weight in the ten day period.

The effect of the various feedings and procedures on the secretion and stimulation of breast milk was calculated by comparing the calories or ounces of breast milk received with the weight of the baby. This amount was calculated on the tenth day. Chart 6 enumerates those infants who received no breast milk at the end of the ten day period. Chart 7 lists those who received less than 25 calories (1¼ ounces) per pound in twenty-four hours. It is assumed that the caloric value of all breast milk is 20 calories per ounce. Chart 8 enumerates

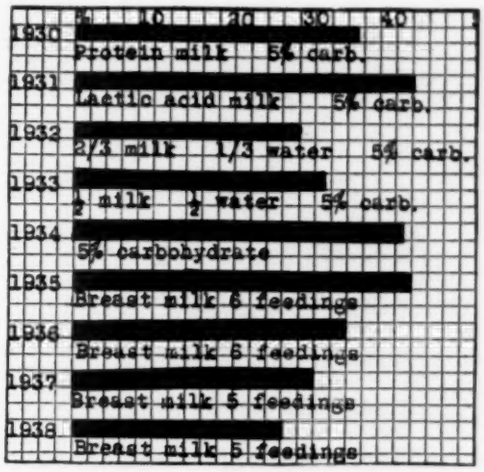

Chart 2.—Loss of weight; percentage of infants who lost between 5 and 8 per cent of their birth weight.

those infants who received from 25 to 35 calories (1¼ to 1¾ ounces) per pound; chart 9, those who received from 35 to 50 calories (1¾ to 2½ ounces) per pound, and chart 10, those who received 50 calories (2¼ ounces) or more per pound.

COMMENT

An examination of the table will show that year for year there was little difference in the average birth weights of the babies. Thirty-eight per cent of the babies weighed between 7 and 8 pounds (3,175 and 3,628 Gm.), 24 per cent weighed between 6 and 7 pounds (2,721 and 3,175 Gm.) and 24 per cent weighed between 8 and 9 pounds (3,629 and 4,082 Gm.). Six per cent weighed between 5 and 6 pounds (2,268 and 2,721 Gm.), and 7 per cent weighed between 9 and 10 pounds (4,082 and 4,536 Gm.). Only 0.9 per cent weighed between 10 and 11 pounds (4,536 and 4,989 Gm.). Premature infants were not included in this study. One can assume from these yearly averages of weights that, on the whole, this was an average group of newborn infants.

LOSS OF WEIGHT

The physiologic loss of weight of the newborn has been a subject of discussion for many years. Certainly it is normal for nature. However, there has been a tendency in the last few years to attempt to improve on nature and prevent this loss of weight. In the four charts showing loss of weight the infants are divided into groups having lost less than 5 per cent of the birth weight, between 5 and 8 per cent of the birth weight, between 8 and 10 per cent of the birth weight and more than 10 per cent of the birth weight.

In using a complementary feeding, as might be expected a loss from the birth weight of 5 per cent or less was observed for more than one half of the babies (except in the case of 5 per cent dextrose, with which the loss was a little less, 44 per cent). However, a high caloric content of the complement does not necessarily decrease the loss of birth weight. The complement of highest caloric value, lactic acid milk, prevented

a loss of birth weight of less than 5 per cent in only a few more of the babies than did the dextrose, with its low caloric value.

For preventing an excessive loss of weight from birth, the best results were obtained with a complement consisting of two thirds milk, one third water and 5 per cent carbohydrate, with which two thirds of the babies

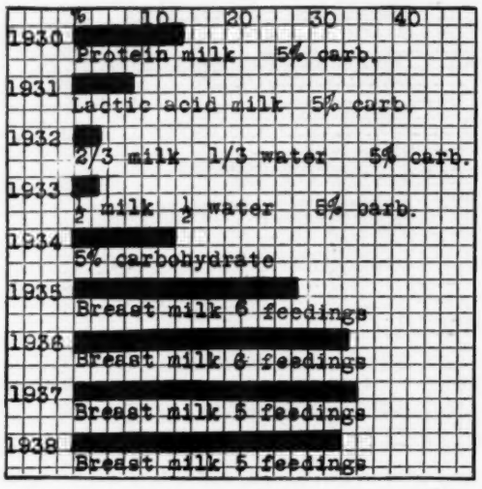

Chart 3.—Loss of weight; percentage of infants who lost between 8 and 10 per cent of their birth weight.

lost less than 5 per cent of their birth weight. Again, it must be noted that even with this rich complement the loss was only 3 per cent less than with one half milk, one half water and 5 per cent carbohydrate. Without feedings complementary to their mother's milk, only 14 per cent, or about one seventh, of newborn babies will show a loss of weight from birth of less than 5 per cent.

An examination of the babies that lost between 5 per cent and 8 per cent of their birth weight (chart 2) shows a remarkable similarity for every form of feeding. The highest figure, 42 per cent, was exactly the same for the

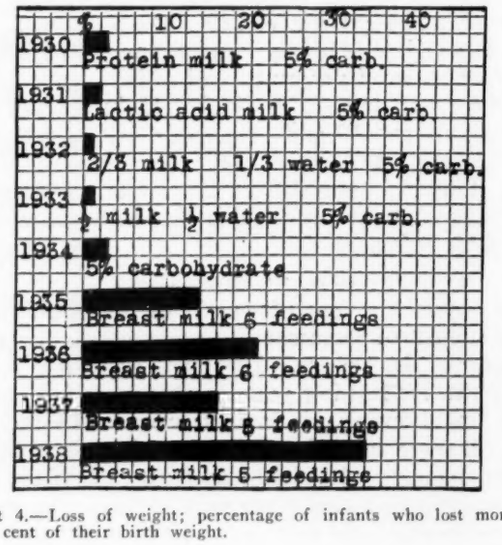

Chart 4.—Loss of weight; percentage of infants who lost more than 10 per cent of their birth weight.

year in which lactic acid milk was used and one year in which no complement was given. There is only 16 per cent difference between the highest number and the lowest number. This indicates that loss of weight from birth in a certain number of babies is independent of complementary feeding or, in fact, any form of feeding. In other words, irrespective of what kind of feeding is given, approximately 33 per cent of all newborn babies will lose from 5 to 8 per cent of their birth weight at their period of greatest loss.

Chart 3 shows that all babies will lose less if given a complementary feeding than if given nothing but their mother's milk. With the complementary feeding with which the greatest loss of weight occurred, protein milk, only one half as many babies lost between 8 and 10 per cent as in one of the years in which breast milk was given alone.

Finally, chart 4 shows that excessive loss, namely over 10 per cent, of the birth weight is rare in babies given any form of complementary feeding. The loss is practically the same for all milk preparations (1 and 2 per cent) and for simple 5 per cent dextrose and protein milk (only 3 per cent). The average for the two years in which no complement was given was 18 per cent for six feedings of breast milk in twenty-four hours and 25 per cent for five feedings in twenty-four hours. It may be said therefore that with no complementary feedings approximately one fourth to one sixth of newborn babies will lose more than 10 per cent of their birth weight.

From the results of these studies one may summarize loss of weight during the neonatal period as follows: Irrespective of whether or not a complement is used,

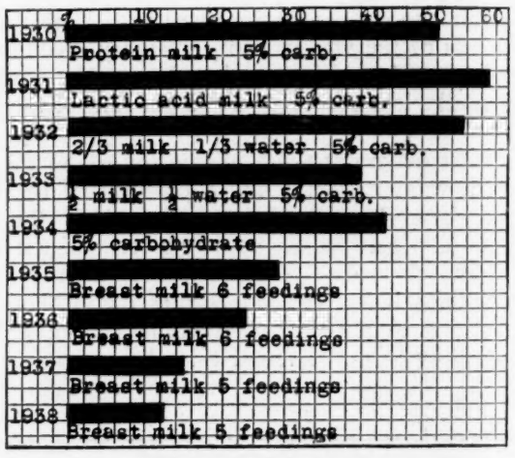

Chart 5.—Gain of weight; percentage of infants who had returned to or passed their birth weight by the tenth day.

approximately 33 per cent, or one third, of newborn babies will lose between 5 and 8 per cent of their birth weight. This one may assume is about the average loss of weight for the average newborn baby. The loss may be influenced by the feeding of a complement to the breast milk obtained and is to some extent proportional to the caloric value of the complement. The higher the caloric value of the complement the less the loss of birth weight. With ordinary complements, including even 5 per cent dextrose, about one half of newborn babies will lose only 5 per cent or less of their birth weight. With complements of high caloric value, this figure may be increased to two thirds. Conversely, it is exceptional for an infant receiving any form of complementary feeding to lose as much as 10 per cent of its birth weight, but with infants not given any complementary feeding who receive six nursings of breast milk in twenty-four hours one must expect that 18 per cent, or approximately one sixth, will lose 10 per cent or more of their birth weight. When only five nursings are received in twenty-four hours, one must expect 25 per cent, or one fourth, of the infants to lose 10 per cent or more of their birth weight.

GAIN IN WEIGHT

In the study of the gain of weight of the infants receiving various forms of feedings, while the gain in weight was calculated for each infant it was found necessary to have some standard of comparison. This was established by again comparing the gain to the birth weight. In chart 5 is tabulated the percentage of infants who had regained their birth weight by the tenth day of life. The caloric content of the complementary feeding seemed to affect the rapidity of the gain in weight. The greatest number of infants regained their birth weight with the heavier feedings. Fifty-seven per cent were found in the group given lactic acid milk and 5 per cent carbohydrate as a complement, although the group given two thirds milk and one third water with 5 per cent carbohydrate was close, with a figure of 54 per cent. Strangely enough, only 38 per cent of the group given one half milk and one half water with 5 per cent carbohydrate had regained their birth weight, while 41 per cent of the group given simply 5 per cent dextrose had done so. One can assume therefore that the rapidity of a return to birth weight is roughly proportional to the caloric content of the complementary feeding.

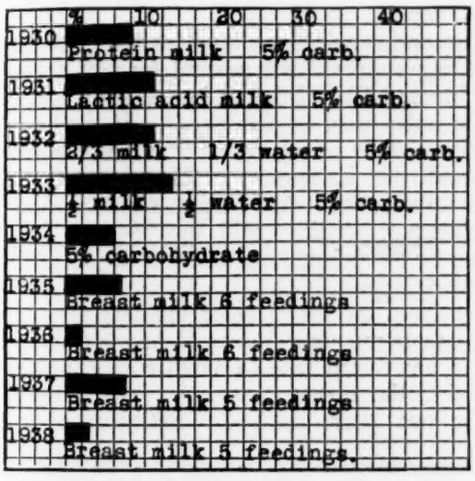

Chart 6.—Amount of breast milk; percentage of infants who received no breast milk.

Of the babies given no complementary feeding, 25 per cent of those given six and 14 per cent of those given five feedings of breast milk in twenty-four hours had returned to their birth weight. However, this is unfortunately a rather biased view of the situation. The breast-fed babies suffered a greater initial loss of weight than did those given a complementary feeding. Actually they gained faster but in ten days could not overcome the initial loss.

One may summarize the gain in weight of newborn infants as follows: About one half given a complementary feeding will have regained their birth weight within ten days. The rate of gain is influenced by the caloric content of the complementary feeding. The higher the caloric value the more this figure will exceed one half, and the lower the caloric value the less likely it is to reach one half. If newborn infants are given no complementary feeding but are nursed six times in twenty-four hours, one fourth will have regained their birth weight at the age of 10 days, and if they are nursed five times only one seventh will have regained this weight. However, this is due to the greater initial loss; actually the gain of weight is faster than in those given complementary feedings.

AMOUNT OF BREAST MILK

In the study of the amount of breast milk obtained by the infants given the various types of feeding, the infants were again divided into groups. Chart 6 shows the percentage who obtained no breast milk. The greatest number received a complement with a high caloric value and the smallest number a complement

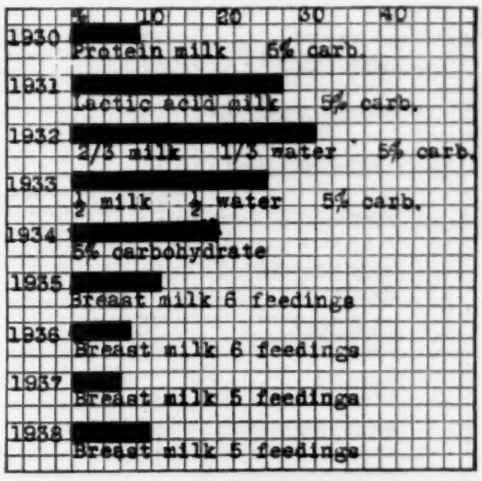

Chart 7.—Amount of breast milk; percentage of infants who received less than 25 calories (1¼ ounces) per pound.

with a low caloric value. The number of those who received 5 per cent dextrose is not different from the number of those who received no complementary feeding. In both groups who were given mother's milk alone there appear to have been approximately 5 per cent of the babies whose mothers had no milk. When complementary feedings were given the number was doubled.

Chart 7 indicates that when the mother has less than the required amount of breast milk a complementary feeding may actually cause it to diminish. More infants

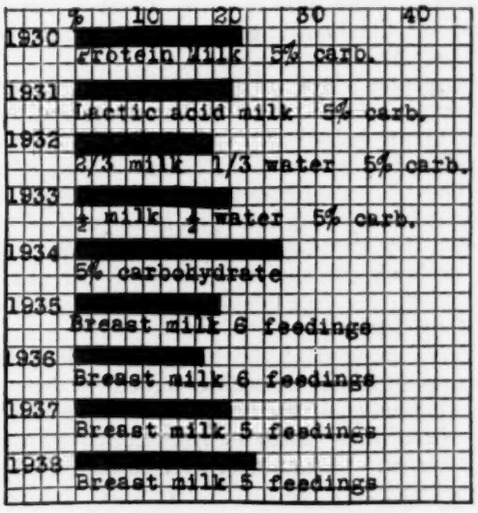

Chart 8.—Amount of breast milk; percentage of infants who received from 25 to 35 calories (1¼ to 1¾ ounces) per pound.

received breast milk when they were given complementary feedings than when they were given nothing but breast milk. This increase in the number of babies receiving small amounts of breast milk is apparently due to an actual suppression of breast milk by complementary feeding. Chart 8 shows that, irrespective of whether the baby is given a complementary feeding or receives only breast milk, about 20 per cent, or one

fifth, will receive only 1½ ounces of breast milk per pound at the end of the ten day period. This holds good for quantities as great as 1¾ ounces per pound (chart 9) as well.

With a greater secretion of breast milk, however, the story was quite different. Chart 10 shows the percentage of babies receiving 50 calories (2½ ounces) or more of breast milk per pound at the end of the tenth

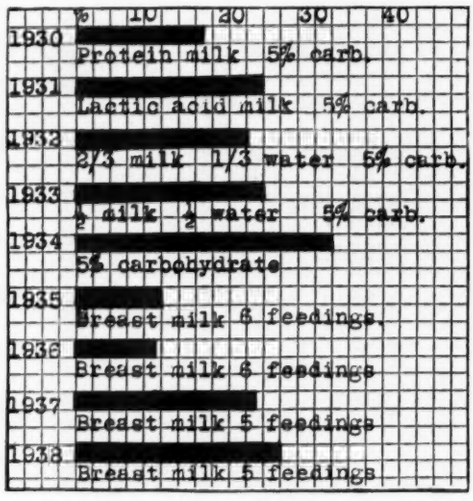

Chart 9.—Amount of breast milk; percentage of infants who received from 35 to 50 calories (1¾ to 2½ ounces) per pound.

day of life. Here the result was striking. With every kind of complementary feeding except protein milk the result was the same, only 18 or 19 per cent of the babies receiving this quantity of breast milk. This clearly shows that, as was indicated in the other charts, complementary feeding suppresses the breast milk. It is shown that when protein milk was used the number of babies receiving 2½ ounces of breast milk per pound was almost three times as great as with other types of complement. This type of complement evidently does not suppress the breast milk as much as mixtures of milk and water.

In the group given no complementary feeding but nursed six times in twenty-four hours, an average of 57 per cent of the babies received 2½ ounces or more of breast milk per pound in twenty-four hours by the tenth day of life. With no complementary feedings but five nursings in twenty-four hours, an average of 41 per cent obtained this amount. It is interesting that one breast feeding a day made a difference of 16 per cent in the number of babies receiving 2½ ounces per pound in twenty-four hours.

One may summarize the effect of various feedings on the amount of breast milk obtained by the newborn infant as follows: A small number of infants will obtain nothing from their mothers irrespective of the form of feeding used. This number may be somewhat greater if a complementary feeding is given. If the mother is giving only a small quantity of breast milk, complementary feedings may further reduce her secretion of milk. With mothers who have a large or normal supply of milk, a smaller number of babies will receive sufficient breast milk (i. e. will be completely breast fed) when given any form of complementary feeding than when given breast feedings alone. Of babies who are nursed and given no complementary feedings of any kind, with six nursings in twenty-four hours more than one half (57 per cent) and with five nursings in twenty-four hours slightly less than one half (41 per cent) will receive sufficient breast milk (i. e. will be completely breast fed) by the tenth day of life.

Before any attempt can be made to estimate the value of the various feedings studied, it is necessary to set up a standard of perfection for the neonatal period. I think that every one will agree on the first requirement, namely that the feeding should be one on which the infant can make a satisfactory gain in weight as judged by present day standards. However, the argument will then arise as to when this gain should be made: Shall the gain in weight be artificial, that is to say at the expense of physiologic loss of birth weight, or natural, on the assumption that this loss is normal?

Nature is perfectly satisfied with the phenomenon of a loss during the neonatal period of from 5 to 10 per cent of the birth weight. My studies show that the average loss irrespective of whether or not a complementary feeding is used is from 5 to 8 per cent. This loss can be lessened, as shown by these studies, with almost any form of feeding used to complement the natural supply of breast milk. According to this standard, the ideal complementary food for the neonatal period will provide as high a caloric intake as the baby can stand from a digestive standpoint. This is the answer to the first requirement of feeding during the neonatal period.

The second requirement involves the question Should the feeding suppress the normal food of the newborn infant, breast milk? I do not intend to argue this point, for it is not a part of this paper. If the physician is not interested in seeing that the infant obtains all the breast milk that its mother is able to give it, this point may be overlooked. My studies show absolutely that complementary feedings will suppress the breast milk obtained by the infant in proportion to the caloric value of the complement.

In our area the majority of mothers fortunately are anxious to nurse their babies if possible, and for this reason I have been able to avoid complementary feeding during the neonatal period. The experiences of the last two years with the omission of the night

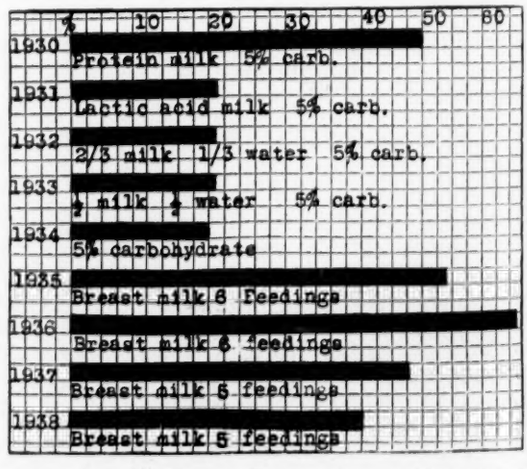

Chart 10.—Amount of breast milk; percentage of infants who received 50 calories (2½ ounces) or more per pound.

nursing leads one to believe that such omission is not a good policy. The baby does not receive quite enough food and the mother's breasts are not stimulated quite enough. I believe therefore that the nursing of newborn infants every four hours, with the avoidance of any complementary feeding except water, is, except in certain conditions, the ideal method for promoting breast feeding.

However, before this policy is adopted, one must revise the old ideas of the infant's weight curve during the neonatal period. With the method described the loss of weight during the first three or four days, before the breasts begin secreting, is considerable. It is certainly startling to see a baby drop 10 per cent or more from its birth weight during this period. Such babies, however, are in excellent condition; they are hungry and stimulate the breasts to such an extent that when the mother's milk comes they gain very rapidly. It is unfortunate that the modern tendency is to allow the mother to leave the hospital ten days after delivery and that a saying prevails that the baby should return to birth weight by the time the mother has left the hospital. With complementary feedings the loss of weight is less but the gain is slower; with no complementary feedings the loss of weight is more but the gain is greater. Such babies cannot gain sufficiently to return to birth weight by ten days, but they are well over that weight by the end of two weeks.

It must be remembered that not all mothers are able to nurse their babies completely or in part. Approximately 5 per cent will have no breast milk and approximately 9 per cent more will have hardly enough to make the effort worth while. This means that about 14 per cent of babies must be given artificial feeding altogether, and, according to the present studies, 30 per cent more may require more than breast milk. My policy is to study each baby on the seventh day of life, and, if it still weighs less than 90 per cent of its birth weight and the breast milk obtained provides less than 40 calories (2 ounces) per pound in twenty-four hours, a complementary feeding is given. This is especially true with babies of less than 6 pounds. It is ridiculous to allow such babies to become premature babies in weight while the physician is waiting for insufficient breast milk. With babies of less than 6 pounds, a complementary feeding is used earlier.

CONCLUSION

From a nine year study of 4,622 newborn infants, one may conclude that one third of all newborn infants will lose between 5 and 8 per cent of their birth weight no matter what form of feeding is given them. With complementary feedings about one half will only lose 5 per cent or less of their birth weight, and with complementary feedings of a high caloric value this figure may be increased to more than two thirds.

About one half of newborn infants (from 38 to 57 per cent) given complementary feedings will regain their birth weight by the tenth day of life. Of infants given no complementary feedings, 24 per cent of those nursed six times and 14 per cent of those nursed five times in twenty-four hours will regain their birth weight by the tenth day of life. However, this lag is due to a greater initial loss; actually the gain in weight is faster than that of infants given complementary feedings.

Complementary feedings tend to suppress the secretion of breast milk. A smaller number of newborn infants (18 to 46 per cent) will receive sufficient breast milk (50 calories or over per pound) when given some form of complementary feeding than when given breast feedings alone. Of newborn infants given no complementary feedings, 57 per cent of those nursed six times in twenty-four hours and 41 per cent of those nursed five times in twenty-four hours will receive sufficient breast milk.

952 North Michigan Avenue.

ABSTRACT OF DISCUSSION

DR. CLIFFORD G. GRULEE, Evanston, Ill.: This question was called to my attention in the first place by the fact that an outpatient newborn service was opened. After following it pretty closely for a year or two, I found that the vast bulk of the children in the outpatient newborn service were on the breast at the termination of the lying-in period, while in the wards only about 45 per cent were leaving the hospital on the breast. I think the question of breast feeding of the newborn is largely an attitude of mind on the part of the doctor, on the part of the mother and on the part especially of the nurse. The nurse has data in the hospital from which she draws her conclusions, which data would be startling if it weren't for the newborn period. The amount of crying and loss of weight are the things that appeal to her as very serious. She forgets she is dealing essentially with a normal child, which she is. Therefore it is her tendency to give the child a bottle. It is the tendency of the doctor to submit to her entreaties, and the consequence is that the number of children on the breast is reduced. I regard this as important. Studies made about six years ago tended to show that there was markedly less mortality and morbidity among children who were breast fed, as compared with those who were artificially fed. There is one question that I think this survey Dr. Sanford has made definitely answers, and that is that women can nurse their babies. It has been repeated frequently that women today were getting to the point where they couldn't nurse their babies because of insufficiency of breast milk and inefficiency of the breast gland. This study pretty well answers that question. It isn't so much a matter of whether the breast gland is capable of functioning as it is whether it is given the proper stimulation by the baby.

DR. WILLIAM J. ORR, Buffalo: The routine procedure of giving complemental or supplemental feedings to the newborn infant to prevent physiologic weight loss or to produce a predetermined weight gain has developed into a pernicious practice. Many of us as pediatricians have been so intent on establishing arbitrary standards of food intake and weight gain that we have lost sight of the excellent facilities that nature provides for the safeguarding of the newborn. This fact has been demonstrated by Dr. Sanford and is equally evident in many private maternity hospitals where so few infants are discharged that are completely breast fed. If we are to establish successful breast feeding, it should have its origin during the infant's stay in the hospital. After his discharge, it is usually too late. The chances of successful breast feeding are lost when, more often than not, an infant leaves the hospital with half of the daily supply of food consisting of complemental or supplemental feedings. It is then only a matter of days before the child is entirely formula fed. The existing fallacious idea that a child must regain his birth weight at the time of his hospital discharge and that the initial weight loss is detrimental to his welfare is responsible for many infants being forced from the breast through the unnecessary use of accessory feedings. Unless this predetermined goal of weight gain is reached, many pediatricians feel that they have failed in their purpose and then resort to the crowding of food at the expense of breast milk. It is not to be inferred that formula feeding of the newborn is wrought with many hazards. In certain instances there are definite indications that require complemental or complete formula feeding, and when they arise this type of feeding can be successfully carried out. What should be emphasized is that human milk is still the best source of food for the newborn.

DR. HEYWORTH N. SANFORD, Chicago: With regard to Dr. Grulee's remarks about breast feeding, we are fortunate in the Chicago area in that the majority of mothers are very anxious to nurse their own babies. One who does not wish to nurse her baby is an exception. I should like to say, however, that there will always be some babies that cannot be absolutely breast fed and must be given some artificial feeding. With regard to Dr. Orr's remarks about infections and their reduction with less complementary feeding, I should like to add that with no complementary feedings to the newborn we have absolutely eliminated infections in our newborn nursery that might arise from the gastrointestinal tract.

THOUGHTS ON OFFICE PRACTICE

ALLEN GREENWOOD, M.D.
BOSTON

Having been in private practice for close to forty-nine years, I have had many interesting experiences which have led me to formulate some thoughts on what to do and what not to do in the handling of patients. An ophthalmologist who gains the confidence of his early patients will unquestionably gradually add to the number of patients who are recommended to him by those who have confidence in him.

In considering how such confidence may be inspired, I would say that there are three rules to follow: 1. Be honest. 2. Be thorough. 3. Do not criticize the work that others have done. Be willing to explain to the patient things about which he should really have a fair amount of understanding. Do not talk too much and do not promise too much. If the patient who comes before you is wearing glasses which you feel, after examination, are not suitable, simply tell him that there has been a change in the eyes and it is necessary to change the glasses. Do not bluntly state that the glasses are all wrong and that the oculist who preceded you has made a mistake. Try to follow the golden rule in your attitude toward the work of others.

I have mentioned especially the desirability of thoroughness. I cannot begin to tell the number of patients who have remarked on the thoroughness of their examination, and it is needless to say that such patients will continue to come back when they need further attention or will come back when told to. Even after so many years of practice it is easy to slip up on the necessary thoroughness.

For a moment let me indicate what I consider a thorough examination to be: (1) observation of the patient and his eyes while a careful history is being taken, (2) a good examination of the front of the eyes with oblique illumination and loupe or with the slit lamp, particular attention being paid to the appearance of the cornea, iris, pupil and lens, (3) careful use of the retinoscope, with or without cycloplegia, to determine quickly the gross refractive error, (4) careful examination of the fundus, including the peripheral portions as well as the disks and maculae, which, I feel, should never be omitted, and (5) examination with trial lenses according to some of the recognized methods of working out the refraction.

After the finding of what is considered the proper refraction, the muscle balance should be tested for far and near vision. It is my custom usually to try the fields by the confrontation method. This can be done very quickly, and if nothing is disclosed it is not necessary, ordinarily, to use the perimeter or tangent screen.

Having discovered all abnormalities about the lids, the lacrimal apparatus, the anterior portion of the eyes, the media and the fundi, and having determined what glasses, if any, are necessary, one is confronted with the task of telling the patient what it is necessary for him to do. Let me caution particularly against saying anything that will cause fear on his part. The only exception to this rule is when a melanoma or a definite glaucoma is found. In such cases it is sometimes necessary to speak with conviction and force in order to prevail on the patient to have whatever is necessary done. Many, many times I have had a patient come into the office who had been unnecessarily frightened by a diagnosis of cataract. I have a drawing of the eye in my office showing the position and use of the crystalline lens and I use this to illustrate to the patient exactly what a cataract means so that he will not confuse a cataract with a possible tumor or cancer. Some forty-five years ago an elderly woman came to see me and I casually mentioned that her very poor vision was due to beginning cataracts. She was terribly upset and nothing I could say seemed to relieve her. She went home, went to bed and in a few weeks passed away. Her family have always felt that my telling her of the beginning cataracts was the cause of her fatal illness. It is certainly disturbing and usually requires several examinations when a patient comes in weeping copiously because some one has told her that a cataract was present in both eyes. Knowing the fear that patients have about cataracts, I seldom use the term until it becomes absolutely necessary or the patient insists on knowing the exact condition. I explain exactly what a cataract means if I have to use the term. I usually tell patients who have a few specks in the lens or a slight incipient cataract that they have a few cloudy spots in the lens of the eye and that such conditions should be watched. All patients who have incipient cataracts should be seen frequently enough to detect the occurrence of some other ocular disease which might be amenable to treatment.

Be patient with the elderly person, and if he comes back dissatisfied with the glasses do not be afraid to make a second thorough examination and then explain why the glasses do not seem as perfect as the patient thinks they should. Spend some time in telling patients how they can most easily become accustomed to the wearing of glasses for the first time or to a radical change. This is particularly necessary with patients who for the first time are getting bifocals. For the majority of patients it is wise to have a check-up on the refraction after the glasses have been worn for a while.

For patients who have conditions that require enucleation it is better to lead up to the operation gradually, even when a malignant condition is suspected.

I wish here to revert to thoroughness in the observation of the patient and in the taking of a history. Many times I have not taken as careful a history as I should. Many little hints are given by the patient when talking about his past ocular experiences. A patient may state that for some years seeing at night has been difficult so that it was hard to walk in dark places. Such a statement should lead the ophthalmologist to examine the periphery of the fundus with unusual care. The patient may also complain that he can see and read much better on a dull day than on a bright day. This calls for a more careful inspection of the nucleus of the lens with the slit lamp. The seeing of double images occasionally will call for a more careful investigation of the ocular motility. Rainbows around lights are of course suggestive of some clouding of the cornea or possibly of the lens. A careful inquiry into the family history of the patient will often lead to suggestion as to the conditions from which he is seeking relief.

In handling any patient who cannot show normal vision with either or both eyes, great efforts should be made to find out the reason. I never like to have a patient leave the office with defective vision until I have found some cause for the defect. Of course in the case of children with amblyopia in one eye it may not be possible to find any definite cause.

Read before the Section on Ophthalmology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

One can never tell what fears there may be in the mind of the patient besides those which he has expressed during the history taking. When the examination is sufficiently advanced or when it is finished and the ophthalmologist is sure that the eyes are healthy and normal, a simple statement of this fact will often do away with unnecessary fear and anxiety. Many times after I have assured a patient that there was no disease whatever in the eyes, that the vision was normal and that there was no indication of future trouble, the immense relief expressed has been very gratifying. The ophthalmologist does not need to be a psychologist to appreciate the wonderful effect of such encouragement. If, however, some chronic condition is found which is likely to progress, the opththalmologist should be very careful not to discourage the patient. No one can tell how long a patient is going to live and no one can tell how rapidly a chronic disturbance may progress, so that all unfavorable prognoses should be refrained from so far as possible. Some thirty years ago a woman was brought weeping into my office by a friend who stated that she had just been told by one of the oldest and best oculists that she would be wholly blind in two years. Examination showed bilateral choroiditis which had not destroyed the macula, and the patient had good central vision. The patient lived for twenty-five years and just prior to her death was still able to read newspaper print. I mention this case to show how unwise it is ever to give such a discouraging prognosis. A good many instances similar to this have come under my observation. I knew of a man who was told that he had optic atrophy accompanying tabes dorsalis and would shortly be blind. He purchased a revolver immediately, and one night when he got up and turned on an electric light which had burned out and found himself in total darkness he seized the revolver and killed himself. It is better to be overoptimistic than to be unduly pessimistic. The woman mentioned, in after years, when she found that she was not going to be blind, was responsible for my seeing many prominent people.

Another practice which is helpful to all ophthalmologists is that of writing letters to the family physician of patients who may need some medical attention. I also write explanatory letters to the parents of school children who are attending school away from home. I find that these parents are cooperative and glad to get an understandable explanation of their child's condition. Sometimes these children have returned to me in later years even from long distances.

The ophthalmologist should try to give as thorough an examination to patients who for any reason are not expected to pay as to those who will pay. He must either give them his best attention or refer them to some place where they can have the proper attention. I prefer to take care of such patients myself, because one can never tell when they may refer many desirable patients to the conscientious physician.

Last, and not least, do not lose your temper with exasperating patients, especially those whom you find it impossible to make understand exactly what you are trying to do. The ophthalmologist should always remember that he is a physician as well as a specialist, and he must remember that many ocular conditions are but manifestations of some general abnormal condition, present either in the body tissues or in the general metabolism.

82 Commonwealth Avenue.

ONE HUNDRED PER CENT OXYGEN

INDICATIONS FOR ITS USE AND METHODS OF ITS ADMINISTRATION

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The ability to administer practically 100 per cent oxygen in the inspired air, economically, efficiently and comfortably, has opened a new field for oxygen therapy. Oxygen in lower concentrations is equally efficiently administered by an apparatus that recently has been described.[1] There is a place in therapy both for low and for high concentrations of oxygen.

By administration or inhalation of oxygen in any certain percentage is meant the average amount of oxygen in the total inspired air. The amount of oxygen, after correcting for water vapor in the alveolar air, is between 5 and 6 per cent lower than whatever may be the percentage of oxygen in the inspired air.

RATIONALE OF AND INDICATIONS FOR ADMINISTRATION OF ONE HUNDRED PER CENT OXYGEN

The underlying physiologic principles and factors on which inhalation of 100 per cent oxygen is based, and the indications for its use, can be presented most conveniently in seven parts:

1. The blood transports the oxygen from the lungs to the tissues and the carbon dioxide from the tissues to the lungs. Oxygen is carried in the blood in two states: (1) a small amount in simple solution according to Henry's law of solution of gases in liquids and (2) a much larger amount in chemical combination with hemoglobin. The amount of oxygen which the blood will absorb from the air in the lungs, and will carry to the tissues, will depend in both instances on the partial pressure of oxygen in the lungs. The amount of oxygen in 100 cc. of arterial blood of the average normal individual, therefore, will be increased from about 19.5 cc. when the individual is inhaling air to 22.2 cc. when he is inhaling 100 per cent oxygen. That is, there will be an increase from 10 to 15 per cent in the oxygen content of the arterial blood.

2. At first thought, this 10 to 15 per cent increase appears to be comparatively small and possibly negligible. That this increase is not immaterial, however, depends on another factor; namely, the rate at which the blood is circulating through the tissues.

The blood as it passes through the capillaries gives up to the tissues, under normal circulatory conditions, only about 40 per cent of its load of oxygen; the venous blood, therefore, is still about 60 per cent saturated and, as is indicated in figure 1 by lines *a b c* the average partial pressure of oxygen in the capillaries will correspond to approximately 35 mm. of mercury (effect of carbon dioxide neglected).

From the Section on Metabolic Investigation (Dr. Boothby) and the Division of Surgery (Dr. Mayo), the Mayo Clinic.

Read before the Section on Surgery, General and Abdominal, at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

1. Boothby, W. M.: Oxygen Administration: The Value of High Concentration of Oxygen for Therapy, Proc. Staff Meet., Mayo Clin. **13**: 641-646 (Oct. 12) 1938. Bulbulian, A. H.: Design and Construction of the Masks for the Oxygen Inhalation Apparatus, ibid. **13**: 654-656 (Oct. 12) 1938. Lovelace, W. R., II: Oxygen for Therapy and Aviation: An Apparatus for the Administration of Oxygen or Oxygen and Helium by Inhalation, ibid. **13**: 646-654 (Oct. 12) 1938.

If for any reason the rate of circulation is decreased, as occurs for example in shock, the blood may give up as much as, or even more than, 80 per cent of its load of oxygen as it passes slowly through the capillaries; therefore the venous blood is only 20 per cent saturated and, as is illustrated by the dotted lines *a' b' c'* in figure 1, will exert a pressure equivalent to approximately 14 mm. instead of 35 mm. of mercury. Now, if nothing else is done but to cause the patient to inspire 100 per cent oxygen, instead of the 21 per cent of oxygen contained in the air, the arterial blood which leaves the lungs will contain, as has been shown, 2.2 cc. more oxygen per hundred cubic centimeters. In consequence the capillary and venous blood also will contain from 10 to 15 per cent more and will be 33 per cent saturated instead of 20 per cent saturated. As is indicated by the line *A B C* in figure 1, there will be a corresponding increase in the partial pressure of oxygen in the capillaries, from 14 to 21 mm., which is the equivalent of a 50 per cent increase in the pressure of oxygen in the tissues.

The line *A B C* in figure 1 illustrates that if the patient is warmed the equivalent of 2 degrees C. the partial pressure of oxygen is increased about 3 mm., which is

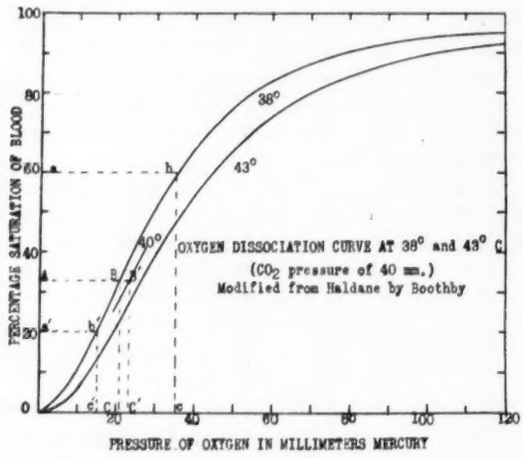

Fig. 1.—Effect of changes of circulation rate and temperature on oxygen tension in capillaries.

approximately an additional 15 per cent increase; this illustrates one of the advantages obtained from increase in temperature. Another advantage obtained from the application of heat can be demonstrated when a patient is in shock. The rate of circulation of such a patient is increased, as is evidenced by a slower and stronger pulse and improved blood pressures; this increased rate of circulation tends to reverse the bad effect produced by slowing of the rate of circulation. Other measures, as for example elevation of the foot of the bed or transfusion of blood, which commonly are used in the prevention and treatment of collapse and shock, are all directed to improving the circulation of blood through the tissues so that oxygen will be delivered at a higher partial pressure. Of these various procedures, administration of 100 per cent oxygen is the most direct and specific method possible to increase the oxygen pressure in the capillaries and tissue fluids.

In traumatic surgery, either military or civil, not only is shock of frequent occurrence but often it is accompanied by direct injury to the blood vessels; this produces local slowing of the circulation in addition to the general slowing which accompanies shock. In such conditions, administration of 100 per cent oxygen not only combats the shock but aids in preserving the injured extremity.

In civil as well as military surgery, use of oxygen unfortunately has been looked on as a therapeutic measure to be used as a last resort. It is now the custom of one of us (C. W. M.) to administer 100 per cent oxygen immediately after operation to all patients who have undergone an extensive surgical procedure. This routine procedure, in conjunction with transfusion of blood in the most severe cases, unquestionably has been beneficial to these patients. Although it is impossible to say in what percentage of cases such measures have been life saving, there is no doubt that convalescence of the patients so treated has been much more comfortable and satisfactory, from the patients' standpoint, than otherwise it would have been; this is a surgical objective which should not be neglected.

From a surgical standpoint, therefore, use of 100 per cent oxygen should not be considered to be only an additional measure for treatment of the patient after collapse or shock has developed, but rather it should be thought of and used as a measure that prevents trouble both for patient and for surgeon.

3. Whenever 100 per cent oxygen is inspired, the nitrogen in the lungs is quickly washed out. Then the nitrogen in the blood, passing through the lungs, will be diffused into the alveoli and in turn will be washed out. In a few minutes most of the nitrogen in the blood will be eliminated and then, when the blood passes through the capillaries in the tissues, it will take up additional nitrogen, carry it to the lungs and there give it off. This elimination of nitrogen from the tissues is similar to the elimination of carbon dioxide by the blood stream and lungs; the process, however, is slower with nitrogen because in the blood there are no "chemical carriers" for nitrogen as there are for carbon dioxide.

We would be remiss did we not credit Fine and his co-workers [2] for the splendid contribution to medicine and surgery which resulted from their demonstration that, compared with lower concentrations, inhalation of 100 per cent oxygen would rapidly remove a greater part of the nitrogen from an obstructed bowel or from the ventricles of the brain after the injection of air that is necessary in encephalography.

Those observations have been confirmed by us. However, we have found that administration of 100 per cent oxygen, in combination with use of the Wangensteen or Miller-Abbott suction method of intestinal decompression, is more efficient than either method alone. The apparatus for inhalation of oxygen here to be described is particularly convenient for these combined types of therapy, for the mask is provided with a special hole, placed in such relation to the nares that the suction tube can be passed. However, in cases of intestinal obstruction surgical measures should not be delayed too long; it is easy to be lulled into a false sense of security by the improvement in the patient's condition, including the decrease in the distention, which follows the use of 100 per cent oxygen and suction.

When, at the operating table, the debatable question arises as to whether a partially obstructed or strangulated segment of bowel should be resected, the decision can be aided by requesting the anesthetist to administer for a few minutes 100 per cent oxygen. If the color of the bowel definitely improves, the segment probably will survive, provided administration of 100 per cent

2. Fine, Jacob; Hermanson, Louis, and Frehling, Stanley: Further Clinical Experiences with Ninety-Five per Cent Oxygen for the Absorption of Air from the Body Tissues, Ann. Surg. **107**: 1-13 (Jan.) 1938.

oxygen is started immediately after operation. On the other hand, if the color of the bowel does not improve, the segment should be removed.

The distressing gaseous distention which so frequently occurs following even some simple surgical procedure often can be relieved, or at least diminished, by administering 100 per cent oxygen. Many such patients experience great relief from gas pains, which all too frequently convert into a period of agony an otherwise normal convalescence.

4. Some types, as yet indefinitely determined, of severe headache, with or without nausea and vomiting, can be relieved by administration of 100 per cent oxygen. Fine demonstrated that the headache following injection of air for encephalography could be greatly relieved thus. In cooperation with Adson, we have completely confirmed this observation. Administration of oxygen should be started in a routine manner as soon as the encephalogram has been obtained. As a result, some patients have no headache and very little discomfort; others may have a moderate or severe headache from one to four hours and thereafter only mild discomfort. After twenty-four hours in nearly all cases there is no further distress. Likewise, we have had good results in the treatment of the headache which sometimes follows spinal anesthesia. Certain patients with that combination of headache and nausea which commonly is classified as migraine have been greatly benefited, especially those who suffered from the type of migraine which is associated with prodromal symptoms; if 100 per cent oxygen can be given during the prodromal period, the attack of migraine may be aborted. The alcoholic headache and nausea which occur "the morning after" sometimes can be relieved, especially if administration of oxygen is combined with physical exercise or heat. In a few cases the nausea and vomiting of seasickness have been relieved.

In all these conditions the beneficial effect can be directly attributed to the relief of the anoxemia which results from circulatory collapse. For example, in cases of severe seasickness the greenish yellow ashen pallor of the patient, the nausea and vomiting, cold beads of perspiration on the forehead, the weak and thready pulse are all symptoms indicative of peripheral circulatory collapse or shock, a syndrome, as we wish to emphasize, which always is benefited even if not entirely controlled by the administration of 100 per cent oxygen.

5. The organisms of gas gangrene and of tetanus are known to be anaerobic. Therefore, in these diseases the prevention of anoxia in the tissue by the inhalation of 100 per cent oxygen which, as we repeat, will increase the oxygen pressure in the tissues between 50 and 100 per cent, is a direct and specific method of combating these diseases. In addition, in cases of gas gangrene the subcutaneous emphysema which results from the presence of hydrogen and nitrogen is rapidly removed; thereby pressure on the capillaries is decreased, thus permitting increase in the rate of circulation of blood, which still further elevates the oxygen pressure in the tissues.

It is possible that the pathogenicity of some other organisms may be reduced when they are exposed to high concentrations of oxygen; as yet this field has been explored little but preliminary results justify further investigation. Even if the infection itself is not influenced, the circulatory collapse which accompanies septicemia, peritonitis and similar conditions can be relieved, at least in part, by administration of 100 per cent oxygen.

6. The symptoms which accompany acute, massive atelectasis are greatly benefited by administration of 100 per cent oxygen. This condition is characterized by the sudden onset of severe dyspnea and cyanosis. These manifestations are due to the continued circulation of blood through that part of the lungs from which all, or nearly all, exchange of air is prevented by the presence of a plug of mucus or of some other obstruction to a bronchial tube. The blood which courses through this region receives no oxygen; therefore the mixed blood of the pulmonary artery is incompletely saturated. Inhalation of 100 per cent oxygen will increase the amount of oxygen in the blood which passes through the aerated portions and thus will partially compensate for the deficiency. In addition, if plugging of the bronchus is not complete the amount of oxygen which will diffuse down into the partially collapsed portions will be increased and the oxygen pressure in the alveoli will be augmented; thus, the average saturation of the arterial blood with oxygen will be still further increased. Frequently the relief thus obtained is rapid and spectacular; in some instances, however, as has been recommended by Moersch, procedures such as bronchoscopy and removal of the mucous plug must be adopted.

In acute pulmonary edema the inhalation of 100 per cent oxygen is of very great benefit; in some cases, as suggested by Barach, its inhalation under slight positive pressure (5 cm. of water) has an additional favorable effect. Pulmonary embolism is another condition in which the dyspnea, distress, anoxemia and resulting shock in some instances can be dramatically relieved.

7. Many types of heart disease will respond more favorably to a standard therapeutic procedure if 100 per cent oxygen also is administered. Relief of the pain of angina pectoris sometimes is obtained with striking rapidity.

LACK OF PULMONARY IRRITATION FROM INHALATION OF 100 PER CENT OXYGEN

In the past eight months, by means of our apparatus for inhalation of oxygen, we have administered 100 per cent oxygen to more than 800 patients without observing the slightest evidence of pulmonary irritation. Except in a very few cases, however, we have not administered 100 per cent oxygen continuously for more than forty-eight hours. We recommend, for the present at least, that this length of time be not exceeded and that thereafter the flow of oxygen and the airports be so adjusted that the patient receives from 50 to 70 per cent oxygen. On the other hand, we have administered 100 per cent oxygen intermittently for several days without the slightest trace of pulmonary irritation.

APPARATUS FOR INHALATION OF OXYGEN

The apparatus for inhalation of oxygen which we have used was devised by two of us together with Bulbulian [1] and is known as the B. L. B. inhalation apparatus. It consists of three parts: the mask, the connecting-regulating device and the reservoir-rebreathing bag.

The Mask.—For use in aviation as well as for the treatment of patients over long periods of time it was essential that the mask be so designed not only that it would be comfortable but also that it would fit perfectly. Two types of interchangeable masks were designed: one, the nasal type (fig. 2), leaves the mouth free for talking, eating or drinking, which is a decided advantage for prolonged use; the other, the oronasal type (fig. 3), covers both nose and mouth and is for use by individuals who have nasal obstruction or who are mouth breathers. Because the basic design conforms

to the underlying bony structures, which are much less variable than the overlying soft tissues, it was found that only two sizes of each type of mask were needed in order to obtain satisfactory and comfortable fit for an individual of nearly any size who had passed the age of 10 years.

The Connecting-Regulating Device.—A metal connecting and regulating device connects the mask to the reservoir-rebreathing bag. The oxygen inlet tube passes

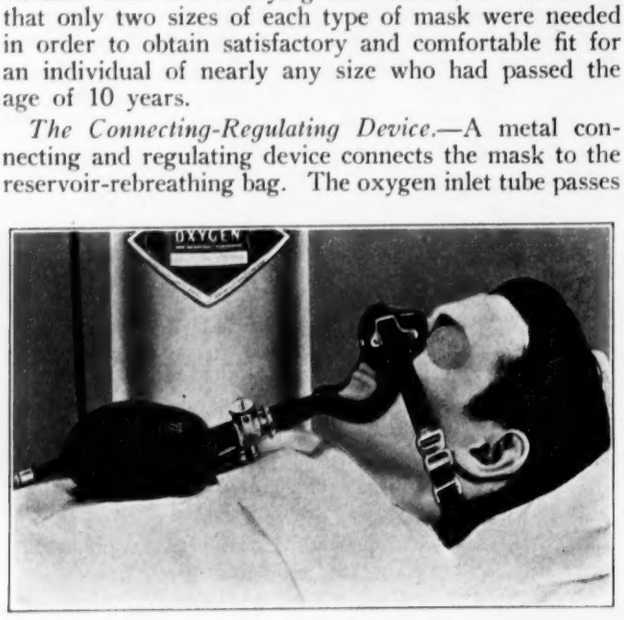

Fig. 2.—Nasal type of mask in use.

through this metal device, turns downward and conducts the oxygen into the lower part of the bag. It is provided with a rotating sleeve which is pierced by three small openings or airports which can be brought into registry with similar openings in the main tube by turning the sleeve. When it is desired to administer 100 per cent oxygen, these airports are closed; when it is desired to dilute the oxygen with air, one, two or three of the airports are left open. In addition, there is an expiratory valve provided with a spring under light tension, which permits escape of expired air over and above that amount which is just sufficient to distend the reservoir-rebreathing bag without causing any appreciable resistance to expiration. By adjusting the airports and regulating the flow of oxygen from the oxygen tank, any desired proportion of oxygen and air can be administered.

The Reservoir-Rebreathing Bag.—The reservoir-rebreathing bag is of such size that it will contain slightly less than the volume of air contained in one expiration under the conditions in which the apparatus is being used. For practical purposes a bag of a capacity of 500 cc. can be used in nearly all instances. The primary object of the bag is to conserve, for inhalation on the following inspiration, the oxygen which is flowing continuously from the tank during expiration. Expiration usually occupies about two thirds of the respiratory cycle. The bag also increases the efficiency of the apparatus in the utilization of oxygen because it collects, in addition to the oxygen flowing in from the oxygen tank, the first part of the expired air, which comes in large part from the "dead space" of the upper part of the respiratory tract and contains the largest amount of oxygen and the least amount of carbon dioxide of any part of the expired air. There is always less than 1 per cent of carbon dioxide in the total inspired air. Enough moisture is present in the bag from the previous expiration to provide a comfortable humidity.

Accessory Apparatus.—In addition to the apparatus for inhalation of oxygen, a reducing valve and flowmeter are necessary parts of the equipment. Any type of reducing valve and flowmeter manufactured by a reliable concern can be used. The flowmeter should be graduated in liters of flow per minute. A float or kinetic type of flowmeter is preferable to one of a pressure type because the latter is more likely than the former to get out of order and give inaccurate readings, especially for the small rates of flow used in conjunction with our inhalation apparatus. Flowmeters should be doubly calibrated so that they can be used to indicate the rate of flow of pure oxygen or of the mixtures of 80 per cent helium and 20 per cent oxygen that are used for the treatment of asthma; by having the double calibration, all reducing valves and flowmeters can be used interchangeably for straight oxygen therapy or for helium-oxygen therapy. Unfortunately, at present, the large cylinders are equipped with two types of valves which have different threads. Therefore a small "adapter" always should be on hand so that the reducing valve can be attached to either type of cylinder valve.

USE OF APPARATUS

If the patient is not a mouth breather, usually he prefers the nasal type of mask rather than the oronasal type of mask.

Each type of mask is made in two sizes: Mask 1 is the nasal mask for men, or for women with large faces; mask 2 is the nasal mask for women or for men with small faces; mask 4 is the oronasal mask for men and mask 5 is the oronasal mask for women. First the appropriate size and type of mask for an individual is selected by placing different masks on the patient's face. Then the rubber tube that runs from the reducing valve and flowmeter (these are attached to the oxygen tank) is connected to the inlet tube of the connecting-regulating device. The oxygen is turned on so that the flow is about 6 or 8 liters per minute, depending on depth and rate of respiration. Next the mask is adjusted in place. In most instances the mask is most comfortably held in place by passing the rubber retaining strap around the back of the head or neck just below the ears; in some instances other positions are better. The length of the strap should be carefully adjusted before it is fastened, so that tension is sufficient only to hold the mask gently against the face. The metal pieces on the

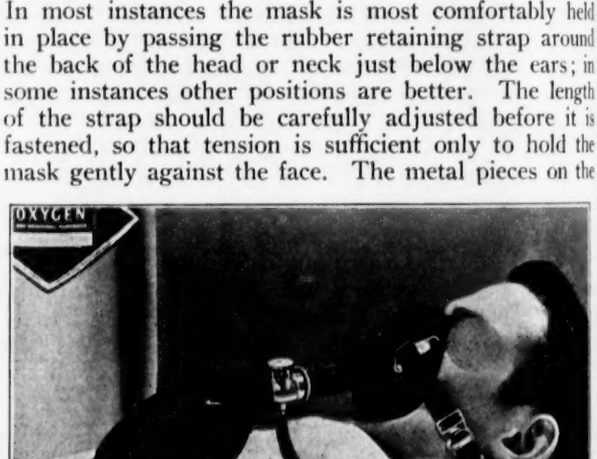

Fig. 3.—Oronasal type of mask in place.

mask, which hold the strap in place, can be bent slightly to aid in making the mask fit accurately; it need not be strapped on so tightly that it is uncomfortable even when worn constantly for days. A glance at the reservoir-rebreathing bag will tell whether the apparatus is properly adjusted to prevent a significant leak, because the bag expands nearly to capacity on expiration and contracts on inspiration.

Adjustment for Inhalation of 100 per Cent Oxygen.—When it is desired to administer approximately 100 per cent oxygen in the inspired air, all three of the port-

holes in the connecting-regulating device should be closed by properly rotating the airport sleeve; the valve which controls the flow of oxygen on the reducing valve should be so adjusted that the flowmeter indicates that from 6 to 8 liters (more if the patient is breathing deeply) is being delivered. After the patient has become accustomed to the apparatus, the rate of flow often can be reduced to 5 or 7 liters per minute. However, at all times when it is desired to give 100 per cent oxygen in the inspired air the rate of flow should be sufficient that the reservoir-rebreathing bag does not completely collapse on inspiration. When all the airports are closed, if the rate of flow of oxygen is not sufficient to prevent the bag from completely collapsing there will develop a sudden, marked resistance to completing the inspiratory cycle, which may frighten the patient if it occurs before he is completely accustomed to the apparatus.

Adjustment for Inhalation of from 50 to 60 per Cent Oxygen.—When it is desired to administer from 50 to 60 per cent oxygen in the inspired air, that is, to use the concentration of oxygen that commonly is employed in the best run oxygen tents, then the rate of flow of oxygen from the tank, as measured by the flowmeter, should be 4 liters per minute for a large adult and slightly less for a small individual; the rotating sleeve on the connecting-regulating device of the inhalation apparatus should be so turned that two holes are open. These holes permit, automatically, the addition of the proper amount of air, when the flow of oxygen is 4 liters per minute, to cause the inspired air to contain between 50 and 60 per cent oxygen. When oxygen diluted with air is being administered and the two airports are open, the reservoir-rebreathing bag completely collapses on inspiration and the patient automatically obtains the remaining amount of his inspired air through the open airports. Note that complete collapse of the reservoir-rebreathing bag is permissible when the airports are opened and it is desired to administer oxygen diluted with air, but that it is not permissible when it is desired to administer 100 per cent oxygen.

NURSING ATTENTION

In adjusting the mask to the face, the nurse should be careful not to have the retaining strap too tight. Tension of the strap should be sufficient only to hold the mask in place and it is sufficiently tight if the reservoir-rebreathing bag is moving up and down regularly with each respiration. Whenever the nurse passes the patient she should glance at the reservoir-rebreathing bag; if it is not moving, only a moment is necessary to adjust the mask properly. To keep the patient comfortable the mask should be removed at intervals of about two hours and the patient's face washed, the skin dried and talcum powder applied. If the patient is at home, any competent member of the family can be taught in a few minutes just what to do. In fact, when the mask is used in the prodromal stage of certain types of migraine to abort an attack, the patient can be taught in a brief time the entire technic of administering the oxygen to himself at home.

COST OF OXYGEN THERAPY

Up to now the high cost of oxygen therapy has acted as a deterrent to its general use early in the course of an illness. To administer oxygen by a tent costs the patient from $12 to $25 a day, without allowance for the special nursing which is usually a necessity. By use of the B. L. B. inhalation apparatus the cost of oxygen therapy should average only $5 to $8 a day, while at the same time the oxygen will be given more efficiently and can be given in higher concentration and in most cases without reduction in comfort. For administration of 100 per cent oxygen the average rate of flow will be 6 liters per minute. This will require the use, daily, of approximately one and one-half large cylinders of commercial size; to administer 60 per cent oxygen on the average requires 4 liters per minute and this means that one large cylinder of commercial size will be sufficient for twenty-four hours. On account of the high cost, tanks smaller than the standard commercial size should be used only for convenience of transportation in emergency.

Naturally, the cost of a large cylinder of oxygen varies in different localities, depending on the amount of oxygen used in that locality and the distance from an oxygen manufacturing plant. The freight is a large item, for the cylinders are heavy and must be transported in both directions. There is no difference between commercial oxygen and medical oxygen; therefore in smaller localities the price of oxygen often is determined by the price that garages or small oxyacetylene welding plants pay for their supply of oxygen. As a rule the smaller oxyacetylene welding shops pay between $3.50 and $4 (f. o. b. producing plant) for a large commercial tank containing 220 cubic feet, or 6,230 liters, of oxygen. The total cost of a tank of oxygen, including freight, therefore should be from $3.75 to $5. Medical users should not have to pay more unless they demand emergency service and delivery at night. The cost of extra delivery service should be distinguished from the regular cost of the oxygen, as such service will be needed only in emergencies, when the patient is seen for the first time at night. Hospitals which use large quantities of oxygen of course would get better rates than users of small quantities.

SUMMARY AND CONCLUSIONS

The oxygen inhalation apparatus devised by two of us, together with Bulbulian, will greatly decrease the cost of oxygen therapy. Its use will increase the availability to the general public of oxygen therapy and of helium-oxygen therapy, because the apparatus is as suitable for use by the family physician, in the patient's home, as it is in large, well equipped hospitals. Furthermore, the scope of oxygen therapy is broadened because the oxygen can be given in any concentration up to pure oxygen, thus enlarging the field of treatment to include diseases that are benefited by high concentrations of oxygen and which do not respond much, if any, to lower concentrations. Inhalation of 100 per cent oxygen does not cause pulmonary irritation if administration is not maintained continuously for more than two days; after two days, lower concentrations should be used.

The conditions which chiefly can be benefited by, and often prevented by, early inhalation of 100 per cent oxygen are traumatic or surgical collapse or shock, abdominal distention, headache following encephalography, certain types of migraine, profuse pulmonary edema, massive collapse of the lung, pulmonary embolism, angina pectoris and some other cardiac conditions, infections due to anaerobic organisms such as those of gas gangrene and tetanus, and possibly certain infections due to partially anaerobic organisms.

Oxygen therapy should be used early in the course of a disease, as an adjunct to other well established procedures. It is not a panacea. It is rarely of value as a last resort.

ABSTRACT OF DISCUSSION

DR. ALVAN L. BARACH, New York: As the authors pointed out, the special advantage of inhaling 100 per cent oxygen over 50 to 60 per cent oxygen is a substantial increase in the amount of oxygen in physical solution in the blood plasma. That means that the oxygen is under a much increased pressure to leave the blood and go into the tissue cells. What are the indications for administration of 100 per cent oxygen, in addition to those mentioned? What are the contraindications, what are the dangers, what is the best method to use? The so-called medical shock or peripheral circulatory failure is the primary indication. This may occur in pneumonia, in heart failure, in coronary occlusion, in which the additional tension of oxygen in

capillary blood may make all the difference between an inadequate and an adequate functioning heart muscle. The extra amount of oxygen in physical solution in the blood is of considerable importance in that type of case. Patients with severe asthma frequently develop pulmonary distention, acute functional emphysema, and that distended condition of the lung interferes with their response to routine treatment. These patients, inhaling intermittently a mixture of oxygen with helium for from three to five days, will get rid of their pulmonary distention and their severe asthma at the same time. I have found it valuable to give 100 per cent oxygen at the conclusion of forty-five minutes' treatment of 20 per cent oxygen mixed with 80 per cent helium. The B. L. B. apparatus is to my mind superior to any mask yet devised in comfort and effectiveness. It is useful in administering 100 per cent oxygen and as a simple method of giving helium with oxygen. If a patient cannot take the mask comfortably, the oxygen tent, the oxygen face tent or the helium-oxygen hood should be employed. A few words about the contraindications of 100 per cent oxygen: In animals, regularly after two to four days of continuous inhalation of 100 per cent oxygen, irritative changes appear in the lungs. These experimental pathologic observations have to be borne in mind. I still think it is safe to limit the use of 100 per cent oxygen to not longer than two days; or, as an alternative procedure, as in certain cases of chronic congestive heart failure, to give 100 per cent oxygen twelve hours of the day and 50 or 60 per cent oxygen the rest of the time.

DR. JACOB FINE, Boston: Until the mechanism of the symptoms following encephalography is better understood, it will be difficult to say whether the relief afforded by breathing 100 per cent oxygen is caused by correcting cerebral anoxemia or by the absorption of the air. One hundred per cent oxygen inhaled for one, two or three hours promptly and dramatically cures the headache and relieves the nausea, and the air is effectively removed from the subarachnoid space and the ventricles. In intestinal distention the primary role of the 100 per cent oxygen lies in its ability to facilitate the more rapid elimination of nitrogen from the intestine rather than in any direct effect of oxygen on tissue function. A decrease in intra-intestinal pressure and the resulting restoration of effective peristaltic activity and improved absorptive function are the achievements which 100 per cent oxygen affords in the nonobstructing types of distention. It would, however, be a grave mistake to place chief reliance on this agent in a case of mechanical obstruction. When the patient's condition will not permit immediate surgical procedures, the use of 100 per cent oxygen, like that of the Miller-Abbott tube, may by its decompressive action be relied on to restore the patient to a better physiologic state and therefore convert the patient from a bad risk to a good risk. As to the relative merits of 100 per cent oxygen and the Miller-Abbott tube, it is clear that the tube, once it passes the pylorus, leaves little to be desired, except in closed loop obstruction, which it obviously cannot relieve, and in which case oxygen has the advantage. There are patients who cannot swallow or will not retain the tube. And there is the occasional instance in which the tube will not pass through the pylorus. In these instances oxygen will serve satisfactorily or may be given while one is awaiting successful passage of the pylorus, which may be a matter of many hours. My experience with the B. L. B. mask has been altogether satisfactory and confirms in every respect what the authors have said about it. We have found it far less cumbersome than any oxygen tent, more economical, and more comfortable for the patient.

DR. WALTER M. BOOTHBY, Rochester, Minn.: I want to agree with Dr. Barach that 100 per cent oxygen should not be used consistently and consecutively for more than thirty-six to forty hours. After this length of time, if further oxygen therapy is indicated, the concentration of oxygen in the inspired air should be reduced to approximately 60 per cent. When using our B. L. B. inhalation apparatus this is done by reducing the rate of flow of oxygen from 6 or 8 liters per minute, with all holes closed in the connecting-regulating device, to about 4 liters per minute and at the same time opening up two or three of the holes in the connecting-regulating device to admit the admixture of air.

TORULOSIS INVOLVING THE HUMAN CEREBRUM

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HELENA RIGGS, M.D.
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PHILADELPHIA

Torulae are yeast-like fungi which occur widely disseminated in nature. They are found on trees, flowers, fruits and insects and are of the genus Cryptococcus. The medical significance of this yeast is its pathogenic production of a cystic blastomycosis in man and certain animals. An accurate estimate of the incidence of torulosis is impossible to determine. This is because the condition is not sufficiently well recognized by the profession at large. The report under discussion constitutes the most recent of sixty-four cases appearing in the medical literature. There are probably numerous instances which go unreported because of failure of diagnosis. The protean manifestations of Torula histolytica leads us to believe this disease worthy of special mention.

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Robert Hooke [1] in 1656 was the first to describe fungous disease. In 1901 Bertarelli and Calamida [2] described yeasts as etiologic factors in throat and tonsil infections. Frothingham [3] in 1902 reported the occurrence of an equine lung involvement. Stoddard and Cutler [4] were the first, in 1916, to give a satisfactory description of the clinical and pathologic characteristics. Freeman and Weidman [5] in 1923 gave a critical analysis of the classification and cultural characteristics of Torula; in 1931 Freeman [6] reported a comprehensive survey of forty-three cases. Mitchell [7] in 1936 pointed out a close resemblance in some instances to Hodgkin's disease. Levin [8] in 1937 formulated an analytic table comprising a total of sixty cases.

CLINICAL MANIFESTATIONS OF TORULA

The onset of the disease is insidious and the course is chronic, thus producing an undetermined clinical picture. Numerous systems may be involved, among which are the lymphatic and central nervous systems. Rarely a visceral involvement occurs, the lesion being found in the kidneys, liver, spleen, bone marrow, lungs, thyroid, adrenal capsule and rarely the skin. The physical symptoms and signs, therefore, largely depend on the type of involvement present. Infection of the lymphatic system produces lymphatic tumors which resemble Hodgkin's disease. Central nervous system invasion suggests tuberculous meningitis, intracranial neoplasm or abscess. The latter two conditions are

From the Medical Division of the Philadelphia General Hospital and the Department of Medicine of the University of Pennsylvania.

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so realistically simulated that subtemporal and suboccipital decompressions have been erroneously performed in an effort to establish a diagnosis. An analysis of the reported cases includes the following antemortem diagnoses in addition to the foregoing: encephalitis, psychosis, dementia paralytica, pneumonia or intrathoracic neoplasm, granulomatous acneiform cutaneous eruption (rare), pelvic and inguinal abscess, ulcerations of the tongue, tumor masses in the nasopharynx with destruction of the soft palate, suppurative otitis media and sarcoma of the tibia.

Infection of the central nervous system is by far the most frequent occurrence. The insidious onset may be accompanied by headache, nuchal rigidity, vomiting, visual disturbances, paresis or paralysis, convulsions and coma. In many instances only inanition, personality changes and a progressive failure ensue, usually unaccompanied by other signs of bacterial or parasitic invasion such as leukocytosis and fever. Other cases have shown a low grade temperature elevation with leukocyte counts varying from a leukopenia to 25,000 or more.

The portal of entrance is undetermined and may include the pharynx, accessory nasal sinuses, tonsils, middle ear and gastrointestinal tract. The widespread occurrence of the torulae on vegetation and insects would suggest the respiratory or digestive tracts as the avenues of admission.

The duration of the disease may be weeks, months or years and the fatality is 100 per cent. Antemortem diagnosis is made by the demonstration of the yeast-like budding, gram-positive fungi in the spinal fluid. Cultures of the fungi have been obtained from the spinal fluid, lymph nodes, respiratory tract, blood and urine.

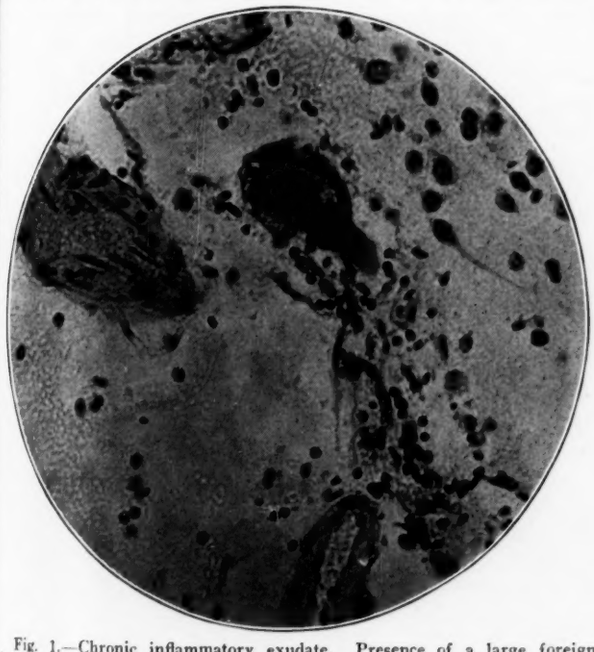

Fig. 1.—Chronic inflammatory exudate. Presence of a large foreign body giant cell containing two engulfed torulae. Slightly reduced from a photomicrograph with a magnification of 253 diameters.

Sabouraud's medium is the most desirable for maximum growth. Rats, mice and guinea pigs are the experimental animals of choice. Spontaneous occurrence of torulosis has been reported in the horse as well as in the chetah.

REPORT OF CASE

History.—W. S. R., a physician aged 61, referred by Dr. Sherman F. Gilpin Oct. 29, 1937, to the medical service of Dr. W. E. Robertson at the Philadelphia General Hospital, complained of generalized weakness which had become progressively worse during the past six weeks. He considered himself in good health until four years before, at which time an attack of herpes zoster on the right chest and abdomen resulted in intermittent asthenia. His practice was greatly curtailed because of insufficient strength to carry on continuously during the past four years. Six weeks before admission, while shaving, he was suddenly seized with severe weakness and fell to the floor, fully

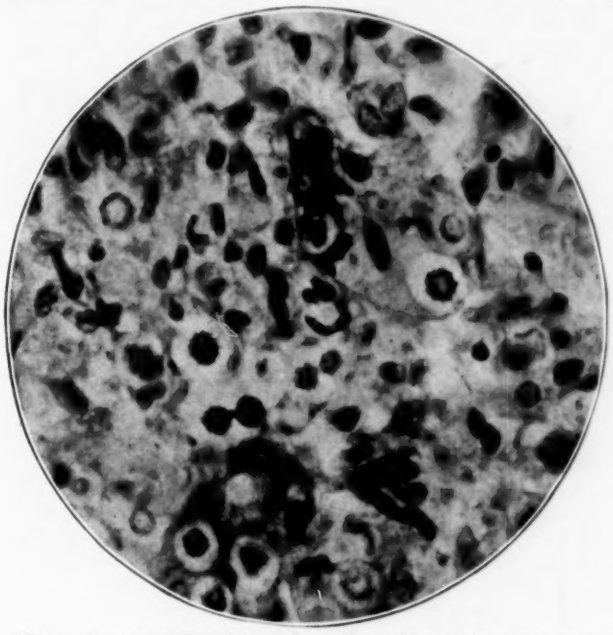

Fig. 2.—Masses of Torula trapped in the meshes of the choroid plexus above the aqueduct of Sylvius. Slightly reduced from a photomicrograph with a magnification of 510 diameters.

conscious. During the four years of ill health, dizzy spells, syncope, dimness of vision and photophobia were frequent. At times there was incontinence of feces and urine. The mental status showed a steady decline with memory failure and ultimately complete disorientation. His health prior to four years before was good, except for typhoid at 20 years of age, and the family history revealed nothing of importance.

Physical Examination.—The patient's nutrition was remarkably good. He was cooperative but mentally hazy. The eyes showed vertical nystagmoid movements. The cardiovascular and respiratory systems were essentially normal except for advanced arteriosclerosis of the fundi and peripheral arteries. The blood pressure was 110 systolic, 70 diastolic. A coarse tremor existed in the hands and tongue, and the extremities showed muscle atrophy with severe loss of motor function. The neurologic examination by Dr. B. P. Weiss revealed that the eyeballs were somewhat prominent. There was tremor of the hands. The pupillary reaction, eye muscles and other cranial nerve functions were intact. There was generalized muscle weakness, as noted by resistance to passive motion. No ataxia was present in the upper extremities but there was some incoordination in the lower limbs, which could be explained by muscular weakness. All deep tendon reflexes were hyperactive with the exception of the patellar and achilles, which were hypo-active. A suggestive Babinski sign was present on the left. No clonus was elicited. The peripheral arteries were sclerotic. The patient was mentally disoriented and confused, with impairment of memory for recent and remote events. There was apparently diffuse cerebrospinal arteriosclerosis.

The medical department made a provisional diagnosis of myasthenia gravis.

Laboratory Studies.—Repeated urinalyses revealed an occasional trace of albumin and specific gravity of 1.022 to 1.033. The red blood cells were 4,230,000 with 95 per cent hemoglobin and white blood cells 17,000. Polymorphonuclears were 92 per cent, lymphocytes 7 per cent and mononuclears 1 per cent. The Kahn test and the Wassermann with cholesterol antigen were negative. Repeated blood cultures showed no growth. Blood bromides were absent, calcium 9.6, phosphorus 5.2 and serum

sodium chloride 550. Blood sugar and urea nitrogen were within normal limits except terminally, when the latter rose to 35. Gastrointestinal examination including feces and gastric analysis were essentially normal. The typhoid, paratyphoid A and B and Bacillus abortus agglutinations, as well as the icterus index, added no confirmatory diagnostic aid. The cholesterol varied from 30 to 164 with corresponding esters of from 46 to 66 per cent respectively. A bromsulphalein test showed 7 per cent retention after thirty minutes. Total proteins ranged from 5.8 to 6.8 with no inversion of the albumin-globulin ratio. The spinal fluid was not under increased pressure and contained 123 cells, of which 50 per cent were polymorphonuclears, 44 per cent lymphocytes and 6 per cent endothelial cells. No tubercle bacilli or other bacteria were demonstrable, the chlorides were 650, sugar was 22 and the Wassermann reaction was negative. Our failure to suspect Torula infection prevented a thorough search for yeasts or inoculation of centrifuged spinal fluid on Sabouraud's medium. A pulmonary roentgenogram, as well as an electrocardiogram, was essentially normal. Cystoscopic examination demonstrated a neurogenic bladder with marked pallor of the mucosa. A low grade fever was continuously present with moderate elevation of temperature and respiration. Histologic examination by Dr. R. P. Custer of a muscle biopsy ruled out myasthenia gravis.

Clinical Progress.—The patient remained confused, disoriented and delusive. His speech was slow, hesitant and frequently incoherent, with the basic trend of thought dwelling on his experiences in the practice of medicine. He was totally incontinent of feces and urine. The asthenia progressed to a state of mental and complete physical dissolution, coma and death on Jan. 20, 1938. Treatment consisted purely of attempts at symptomatic relief. Had the true causative agent been suspected, compound solution of iodine 25 minims (1.5 cc.) in 100 cc. of physiologic solution of sodium chloride would have been administered intravenously on alternate days with the hope of some therapeutic action on the cystic blastomycosis.

Necropsy Report.—The gross examination as reported by Dr. G. H. Craddock showed marked emaciation and atrophy of the skeletal muscle system. There were a confluent bronchopneumonia of the right upper lobe, bilateral healed apical tuberculosis and atelectasis of the left lower lobe and healed tuberculous mediastinal nodes. Benign nephrosclerosis and myocardosis completed the picture. The gross appearance was corroborated by the microscopic examination.

Examination of the nervous system was made by Dr. Helena Riggs. The pituitary fossa was eroded and funnel shaped. The pia-arachnoid was thick and dense, like the boiled white of an egg. There was enormous dilatation of the subarachnoid space. The cerebellar tonsils were crowded together so that the cisterna magna was obliterated and the vermis compressed. The lateral and third ventricles were enormously dilated, constituting "hydrocephalus ex vacuo." The circle of Willis was extremely hypoplastic and anomalous in formation.

Microscopic examination revealed infiltration of the subarachnoid space with lymphocytes and plasma cells in association with large multinucleated foreign body giant cells. Contained in the giant cells and also free were numerous cells larger than the plasmocytes. These showed a clear refractile capsule and a central round body bristling with spikes, basophilic in type. These appeared to be spores with occasional budding. The exudate and spores were also massed around and within the choroid plexus at the level of the aqueduct. There was a chronic inflammatory reaction in the ependyma of the whole ventricular system with formation of subependymal nodules. The exudate was present over the vertex and base as well as in the subarachnoid space of the cord. The optic nerves showed dense extension of the exudate along the perivascular spaces with a beginning invasion of the tissue itself. There was also severe parenchymatous degeneration of the entire nervous system. Considering the very small and anomalous cerebral vascular tree, it would appear that cerebral circulatory insufficiency as well as the torular infection was an etiologic factor in the parenchymatous changes. There was evidence of more recent focal areas of degeneration, including an area of chronic incomplete softening in the anterior segment of the pallidum which might have been attributed to the effect of the infection on the cerebral circulation.

In the light of the clinical evidence of severe muscular atrophy and muscular weakness, it is of interest that the pyramids in the medulla and the entire spinal cord showed signs of parenchymatous degeneration with glial reaction. This may have been due to interference with circulation in the anterior and posterior spinal arteries at their point of origin, since it was noted that these vessels had been compressed as a result of the chronic cerebellar herniation. The diagnosis of torular meningitis was confirmed by Dr. Fred Weidmann.

SUMMARY AND CONCLUSIONS

Torulosis, a yeastlike cystic blastomycosis, is an occasional pathogen of man. The clinical importance of this infection lies in the multiplicity of its systemic involvement, the most frequent of which is the central nervous system. An entity which may closely simulate Hodgkin's disease, tuberculous meningitis, intracranial and thoracic neoplasm, as well as other maladies, offers a perplexing diagnostic problem worthy of more than passing interest to the practitioner of medicine and surgery.

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HISTOPLASMOSIS OF DARLING

FOURTH CASE TO BE REPORTED IN UNITED STATES

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JOHN F. SHAUL, M.D.
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Histoplasmosis of Darling (Darling's disease) is a rare disease entity. As far as can be ascertained, until 1934 only seven cases [1] had been reported in the medical literature, all of which had occurred in the Western hemisphere. Four were found in the tropics: three in Panama and one, in which the diagnosis was histoplasmosis of the lung,[2] in Honduras. The remaining three were reported from Minnesota, California and Tennessee, respectively. The racial distribution was varied. Of the four patients in the tropics, two were Martinique Negroes, one a Chinese and the fourth a "native" of Honduras. The patients in the United States were a mulatto and two members of the white race, one of them an infant, none of whom had ever been in the tropics or had had any contact with tropical areas. Only in the case reported by Dodd and Tompkins was the diagnosis made during life by the discovery of the parasite in supravitally stained blood smears. The organism was also successfully cultured from the tissues post mortem.

From the Medical and Laboratory Services of the Children's Hospital. Capt. Elbert DeCoursey, United States Army Medical Corps, gave assistance and advice.

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Riley, W. A., and Watson, C. J.: Histoplasmosis of Darling, with Report of a Case Originating in Minnesota, Am. J. Trop. Med. **6:** 271, 1926.
Crumrine, R. M., and Kessell, J. F.: Histoplasmosis (Darling) Without Splenomegaly, Am. J. Trop. Med. **11:** 435, 1931.
Phelps, B. M., and Mallory, F. B.: Toxic Cirrhosis and Primary Liver Cell Carcinoma Complicated by Histoplasmosis of the Lung, Fifteenth Annual Report, Medical Department, United Fruit Company, 1926, p. 115.
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We feel that our case merits attention, since it is the eighth case of histoplasmosis to be reported in the medical literature and the fourth in the United States. In spite of its apparent rarity, we believe that the disease may be more common in this country than is generally believed, and for this reason its clinical picture, pathology and possible epidemiologic aspects deserve the interest of the medical profession.

REPORT OF CASE

History and Examination.—F. C., a white girl aged 11 months, was admitted July 22, 1938, to Children's Hospital in the services of Drs. Kirby Smith and Reginald H. Mitchell, having been referred for hospitalization from Paeonian Springs, Va., by Dr. W. C. Barr. The patient's illness dated from the early part of January 1938, when at the age of 6 months she had been weaned and given a formula containing cow's milk obtained from a cow owned by her parents. About three weeks later she began to suffer from intermittent fever and projectile vomiting two or three times daily after feedings. One month prior to admission she exhibited marked drowsiness accompanied by intermittent fever and periods of alternating diarrhea and constipation.

The past history was essentially negative. The patient was born prematurely at the age of 7 months, the birth weight being 3 pounds 14 ounces (1,780 Gm.). Labor was induced because of the mother's hypertension. The infant, apparently normal at birth, had developed satisfactorily until the onset of the last illness.

The family history was irrelevant. The parents were of English, Irish and German extraction and lived on a farm several miles from Paeonian Springs, Va. The mother's health had always been poor and she had suffered from "kidney trouble" since an attack of scarlet fever in late childhood. She had never had other children. Neither the parents, the patient nor the immediate associates had ever been out of the state of Virginia.

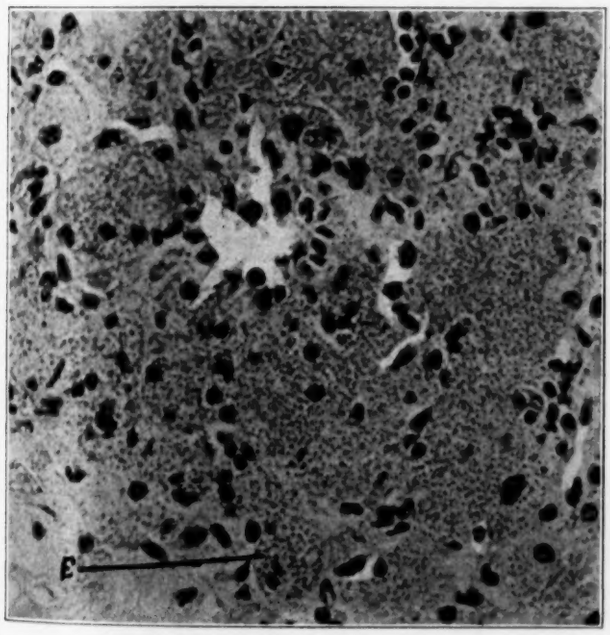

Fig. 1.—Section of adrenal under low power (× 880) showing many reticulo-endothelial cells loaded with parasitic bodies. *E*, endothelial cells.

In summary, this infant was admitted with a history of intermittent fever and vomiting of six months' duration, drowsiness, and alternating diarrhea and constipation of one month's duration.

At physical examination on admission the child appeared malnourished and slightly dehydrated. She weighed 8⅘ pounds (4 Kg.) and had a rectal temperature of 103.2 F. There was slight ptosis of the left eye, and the teeth were absent. Bilateral cervical adenopathy was noted, as well as scaling of the skin of the hands and feet. Over the left lower costal area there was a slightly elevated soft white lesion measuring approximately 4 cm. in diameter. The heart rate was rapid, and a systolic murmur could be heard over the pulmonary areas. The spleen extended down to the iliac crest, and the liver was palpable 6 cm. below the right costal margin in the midclavicular line. The other results of physical examination were of no significance.

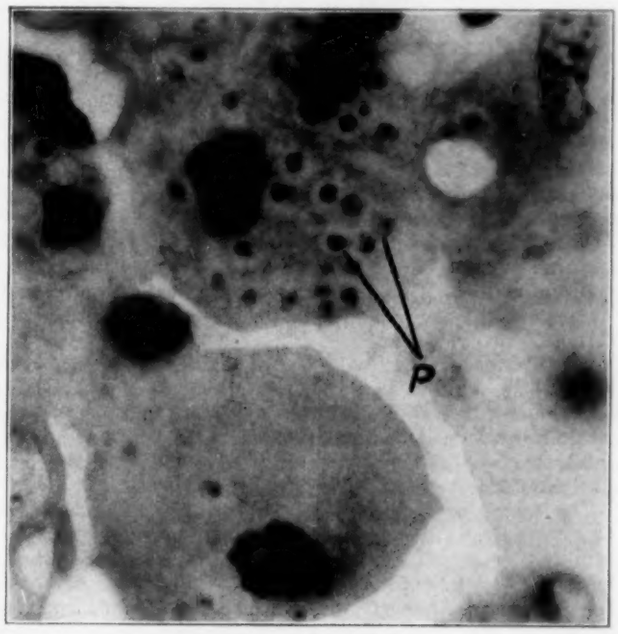

Fig. 2.—Section of adrenal under high power (× 1,600) showing parasitic bodies in endothelial cells in the medullary portion.

Because of the clinical picture (hepatomegaly, splenomegaly and the condition of the blood), a diagnosis of aleukemic leukemia was made.

Course.—From the day of admission the patient's course was rapidly downward. Gavage feedings and nearly daily hypodermoclysis, intravenous infusions of dextrose and transfusions were required to maintain nutrition. For the first ten days following admission the temperature fluctuated between 98.6 and 103 F. From the tenth day on there was sustained pyrexia, the temperature ranging from 101 to 105 F. No increase in the size of the liver and spleen was noted during the hospital stay. August 2, twelve days after admission, a decubitus 2 cm. in diameter appeared over the sacral area. This gradually increased in size. A purpuric area measuring 4 cm. in diameter appeared on the left side of the abdomen August 6. August 8 a small gangrenous area the size of a pea was noted on the right ala nasi. These areas gradually became more extensive, and August 11 several small purpuric spots were seen around the umbilicus and in the left groin. The patient died at 11:45 p. m. August 12, twenty-two days after admission and approximately seven months after the onset of the illness.

Hemograms

	July 22	July 27	Aug. 4	Aug. 9	Aug. 10	Aug. 12
Hemoglobin....5.0 Gm.(30%)		10.5 Gm.	9.5 Gm.	9.5 Gm.		
Red blood cells.....	2,140,000	3,240,000	3,810,000	2,900,000		
White blood cells..	3,700	4,100	3,100	2,500		
Neutrophils.....	62%	67%	60%	64%	74%	73%
Segmented forms	57%	23%	44%	56%	36%	27%
Band forms.....	5%	29%	10%	6%	37%	38%
Metamyelocytes.	....	15%	6%	2%	1%	10%
Lymphocytes.....	34%	31%	40%	32%	8%	
Monocytes.....	1%	2%	....	4%	5%	
Eosinophils.....	2%					
Plasma cells.....	1%					
Monocytic cells (possibly stem cells).....	....	....	....	....	8%	
Unclassified cells...	....	....	....	....	5%	

Laboratory Examination.—The urine was normal. Reactions to tuberculin (1:1,000), Schick, Wassermann and Kahn tests

were all negative. Sternal puncture was attempted without success August 5, eight days before death. It was not repeated because of the critical condition of the patient.

The results of differential counts are shown in the accompanying table. July 22 no malarial parasites were seen on the blood smear. July 27 marked anisocytosis and a few poikilocytes were evident. August 4 thrombocytes were practically absent. August 10 the erythrocytes appeared normal and no thrombocytes were seen in the preparation.

Necropsy (Gross and Microscopic).[2a]—The body was 60 cm. long, which is normal for a baby of 4½ months. It weighed 3,580 Gm. The skin contained areas of hemorrhage of varying size, the largest 2 cm. in diameter, with ulceration. Deep purple staining material was observed immediately below the epidermis and in the deeper portions. Parasitic bodies were present in these areas, being especially numerous at the points of ulceration. The skull was not opened. The cisternal fluid was clear and colorless.

The thymus and mediastinal and bronchial lymph nodes appeared normal on gross inspection. The pleural cavities appeared normal. The lungs showed congestion and atelectasis. The pericardial sac and heart were essentially normal. The peritoneal cavity was normal.

The liver, which weighed 237 Gm. (normal, 175 Gm.), was firmer than normal, with capillary hemorrhages and passive congestion. Microscopic examination revealed fibrosis about the trinities, with numerous and prominent cells of the reticuloendothelial system containing many parasitic bodies. There was a considerable deposition of brown pigment.

The spleen weighed 144 Gm. (normal, 16 Gm.) and was 11.9 cm. long. The surface was deep red and the cut surface firm and congested. There was extensive replacement of the lymph follicles by endothelial cells crowded by parasitic bodies and pigment. Although the reticulum was prominent, the trabeculae were not. The pancreas showed areas in which the acinar structures had undergone a fatty metamorphosis or

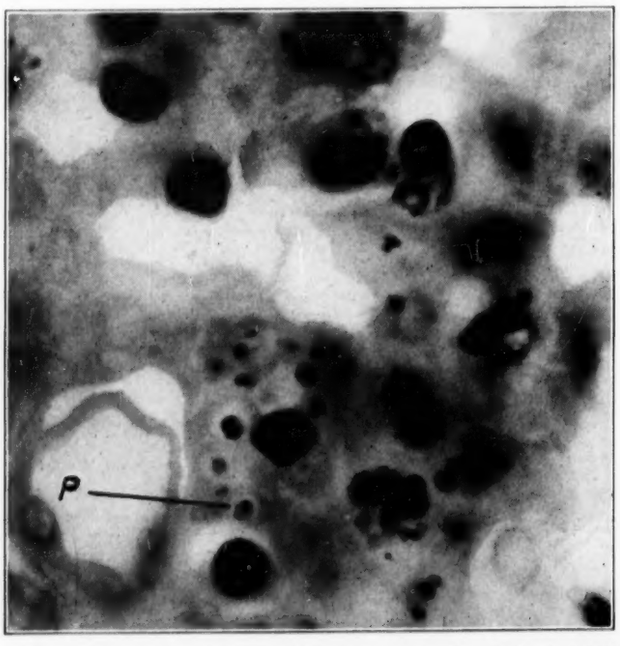

Fig. 3.—Section of spleen under high power photomicrograph (× 1,600) showing many endothelial cells containing the parasitic bodies. *P*, parasitic bodies.

replacement by foamlike cells which appeared to contain bodies suggestive of parasitic bodies.

In the intestine numerous petechiae were observed in the serosa, the vessels being injected. The mucosa was edematous, with hemorrhagic and ulcerated areas. Microscopic examination showed a dense infiltration of large cells containing parasitic bodies immediately beneath the ulcerated areas. The inflammatory reaction was mild. In the necrotic area was observed a mass of purple staining material similar to that noted in the skin and kidney.

2a. Courtesy of Pathological Department, Dr. J. W. Lindsay, director.

The mesenteric lymph nodes were enlarged and matted together. Microscopic examination showed replacement of the original structure except the capsule and reticulum by very large foamlike cells containing parasitic bodies. Some cells were multinucleated and others showed no nuclei and were probably at the point of rupture.

The kidneys weighed 38.5 and 36 Gm. (normal, 21 Gm.), were congested and showed petechial hemorrhages. Small gray

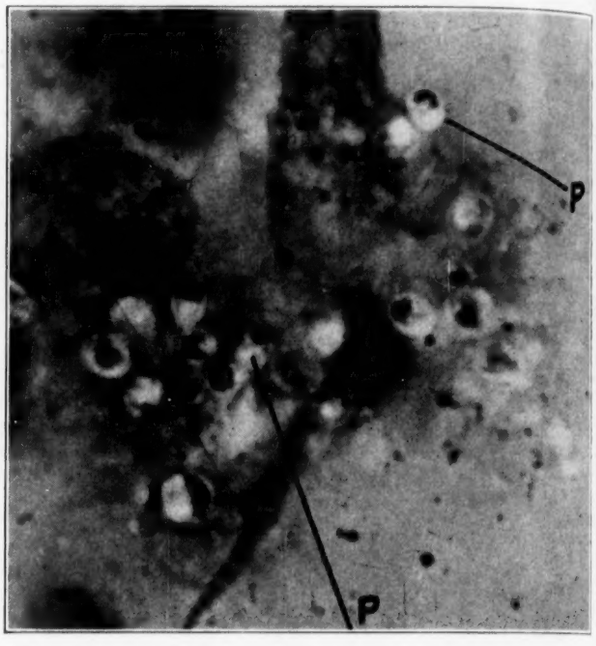

Fig. 4.—Section of bone marrow, oil immersion field (× 1,908) showing the parasitic bodies. *P*, parasitic bodies.

and white areas were scattered throughout the cortex and medulla. Microscopic examination revealed collections of black or deep purple pigment in the vessels which showed intimal proliferation. The tubules showed degenerative changes, as evidenced by swelling and fatty infiltration of the lining cells, their lumens containing hyaline material and deep purple pigment.

In the adrenals, hemorrhagic and firm white areas were noted. The greater portion of the medulla and to a lesser extent the cortex were replaced by large clear pale staining cells with relatively small nuclei. These cells were largely filled with parasitic bodies rather than fat; however, many of the cortical cells showed evidence of fatty metamorphosis. Several areas of necrosis were found in the central portion of the gland.

In the bone marrow, endothelial cells containing parasitic bodies were frequently noted.

The parasitic bodies seen in sections of the skin, liver, spleen, pancreas, intestine, mesenteric lymph nodes, adrenals and bone marrow closely resembled the intracellular parasites described by Crumbine and Kessel. The organisms were found almost without exception in large endothelial cells. On examination with oil immersion, each body was found to consist of a central portion surrounded by a capsule or wall.

On first observation there appeared to be a rather marked similarity between the parasitic bodies and the Leishman-Donovan bodies of kala-azar. However, no distinct blepharoplast was observed, and the wall was thicker than the thin ectoplasmic membrane of parasitic bodies. The irregular arrangement of the chromatin material within the cytoplasm was more suggestive of a yeastlike body than of a protozoan cell.[1]

COMMENT

In 1905 S. T. Darling at the Ancon Hospital, Canal Zone, spurred on by a statement of Sir Patrick Manson [3] that kala-azar or an analogous disease might be found in America, made a special postmortem study

3. Manson, Sir Patrick, in a lecture on tropical diseases delivered at Chicago and cited by Darling.[1b]

relative to the presence of Leishman-Donovan bodies in the tissues of all patients dying of splenomegaly at the hospital. During a period of approximately two and one-half years, in which there were 33,000 admissions, Darling found three cases of a disorder seen to possess certain points of resemblance to kala-azar, viz. splenomegaly, irregular pyrexia, leukopenia, anemia, emaciation and chronicity. On examination of tissues in these cases a parasite was found which, while bearing some resemblance to the etiologic agent of kala-azar, had certain fundamental morphologic differences. To quote Darling's description, the disease was caused by a small round or oval micro-organism from 1 to 4 microns in diameter and possessing a polymorphous chromatin nucleus, basophilic cytoplasm and achromatic spaces, all enclosed within an achromatic refractile capsule.

The micro-organism differs from the Leishman-Donovan body of kala-azar in the form and arrangement of its chromatin nucleus and in not possessing a rod. Believing the organism to be of a protozoan nature, Darling applied to it the name of Histoplasma capsulatum and called the disease in which it appeared to be the etiologic agent histoplasmosis.

In 1912 Da Rocha-Lima,[4] after a study of tissues from Darling's cases, expressed the view that Histoplasma capsulatum was closely related to Cryptococcus farciminosus, the etiologic organism of epizootic lymphangitis of horses, a member of the group of fungi imperfecti belonging to the group Hyphomycetes. According to Meleney,[5] Darling concurred with him in this conclusion.

DeMonbreun in 1933, working with cultures of the organism obtained in the case of Dodd and Tompkins, was able to accomplish much toward determining the exact classification of the parasite as well as throwing further light on its pathogenicity. During the course of his work he discovered that the organism could be cultured and grown in yeastlike and mycelial form. Experimentally producing the disease by the intravenous inoculation of monkeys (Macacus rhesus) he firmly established the fungus as the etiologic organism in histoplasmosis and demonstrated that the "pathogenic" or intracellular phase of the parasite is the yeast-like form.

As the result of his observations, DeMonbreun concluded that "although certain cultural characteristics of the organism are suggestive of those of the Endomycetales group of fungi, it seems best to retain for it the name Histoplasma capsulatum as given by Darling, until comparative cultural studies determine its logical classification," and he recommended that "to emphasize its relationship to the host cells . . . the present clinical term Histoplasmosis of Darling be changed to Cytomycosis of Darling."

Ciferri and Redaelli [2] have expressed the belief that the parasite "must be classified among the Blastosporales sensu lati or the group of budding yeasts."

Since the disease was first described thirty-three years ago, little has been written on the geographic distribution, mode of transmission and possible natural reservoirs. Darling said that its most likely origin was in Martinique or Panama, since two of his patients were Martinique Negroes residing in Panama. His third patient, a Chinese, had lived on the Isthmus for fifteen years prior to his death. The rapidly improving sanitary conditions of the Canal Zone, Darling felt, were responsible for its apparent disappearance from this area. He prophesied, however, that histoplasmosis would be encountered in some part of tropical America "not yet disturbed by the sanitarian." The thought that it might be found on the North American continent he expresses in another writing:[1c] "New World disorder is bound to appear in Baltimore some day."

No writer except Darling has ever ventured an opinion as to the mode of transmission of the disease.[1b] He expressed the opinion that it "may be transmitted by a suctorial insect or acarid, or the micro-organism may gain entrance to the tissues of the host through the intestinal tract." It should be stated that this quotation is taken from one of his earlier papers on histoplasmosis, written when he was under the impression that the causative organism was protozoan and similar to the Leishman-Donovan body of kala-azar. No other view on this aspect of the disease has been expressed in any of his subsequent writings.

Numerous attempts were made by Darling to determine whether the parasite was present in the water, insects and animal life (including monkeys) of the Canal Zone, but without success. Special examination and culture of the feces and material from the intestinal tract were equally unfruitful. The work of DeMonbreun, in which he was able to produce the disease experimentally in rhesus monkeys, suggests a possible reservoir of the disease in the tropics. The same worker was able to achieve similar results in mice and puppies by the use of much larger amounts of the broth suspension of the parasite than that used in the inoculation of the monkeys.

Because the disease was recognized during life in only one of the seven cases reported, little has been written on its therapy. Dodd and Tompkins used symptomatic and supportive treatment, as they felt that "treatment for the overwhelming parasitic invasion of the body was problematical and seemed almost hopeless."

The only possible therapeutic suggestion for histoplasmosis which we have found in the literature is that contained in a report by Négre and Bidre [6] of 1911 of a case of human epizootic lymphangitis. In this instance one dose of 0.6 Gm. of arsphenamine "brought about a speedy and complete cure." Since some writers have maintained that there is similarity between Cryptococcus farciminosus, the etiologic organism of epizootic lymphangitis, and the parasitic agent of histoplasmosis, one of the arsenicals might theoretically be indicated in treatment of the latter.

The history and clinical picture which our patient presented on admission were somewhat similar to those noted by Dodd and Tompkins for their patient, also an infant, although their patient's course was much shorter. From the point of view of chronicity, our patient's condition resembled more closely that described for adults. Our hemograms, characterized by leukopenia, decreased platelets, severe anemia and a moderate number of monocytic cells, approached somewhat, except for the leukopenia, the hematologic picture noted by Dodd and Tompkins. Because we felt that we were dealing with primary anemia, no attempt was made to examine blood smears by the supravital technic for parasites. We found no "parasitic inclusions" in our smears stained with Wright's stain, as those workers stated that they did in their case.

The postmortem appearances in the case we are reporting agree closely with those described by Darling and by Riley and Watson, namely an overwhelming parasitic invasion of all the body tissues, including the

4. Da Rocha-Lima, H., cited by DeMonbreun.[2]
5. Meleney, H. E., cited by DeMonbreun.[2]
6. Négre and Bidre, cited by Riley and Watson.[1]

bone marrow, which involved especially the large mononuclear cells. On gross examination, however, we noted no pseudogranuloma of the lungs as described by Darling and said by him to be the "chief anatomic difference" between kala-azar and histoplasmosis.

For some time we regarded the case under discussion as one of infantile kala-azar, the history, clinical picture, hemograms and gross pathologic picture fitting in closely with those described by Scott and Li [7] in their series of 100 cases and with those reported by other writers. Although our patient had no history of a contact with any one suffering from the disease or coming from a country in which it is endemic, the fact that a case [8] of kala-azar was said to have been discovered near the home of our patient some years before made us speculate as to the presence of an endemic focus of that disease in this area. The morphologic picture of our parasite was somewhat atypical when compared to that of Leishman-Donovan bodies seen in tissue sections from countries where kala-azar is endemic since we were never able to demonstrate the chromatin rod or blepharoplast.

We conjectured as to whether our inability to obtain a clearer morphologic picture by the employment of some parasitic stain such as Leishman's might not be due to the fact that the nature of the disease was not suspected at autopsy. The specimens of tissue taken for microscopic examination were fixed in 10 per cent solution of formaldehyde, which is the routine procedure at our laboratory. Our slides were submitted to a number of parasitologists and pathologists experienced in the field of tropical medicine, the majority of whom concurred with us in our diagnosis of kala-azar.

However, further study of our sections and persistent failure to demonstrate in any of our parasites a chromatin rod, together with the presence in some of our organisms of a capsule, made us question somewhat the validity of our diagnosis. These facts and the opinion of Dr. Henry E. Meleney,[9] who had examined some of our sections, made us suspect that we were probably dealing with a case of histoplasmosis and made the diagnosis of kala-azar no longer tenable in our minds, and we felt that our tissue sections no doubt demonstrated the "pathogenic," or intracellular, phase of the parasite.

In conclusion, the history, clinical picture and laboratory and pathologic examinations lead us to believe that this was a case of histoplasmosis of Darling. Because of the rarity of the disease some of the slides have been placed on file at the Army Medical Museum, Washington, D. C., where any one interested may see them.

We should like to stress the advisability of considering this disease in the differential diagnosis of any obscure case of splenomegaly, especially if the splenomegaly is associated with intermittent pyrexia, cachexia and leukopenia. Supravitally stained blood smears and possibly bone marrow or splenic puncture might prove valuable diagnostic aids.

SUMMARY

In a case of splenomegaly and hepatomegaly with anemia in an American born girl aged 11 months, the history, clinical picture and course, as well as the postmortem examination, supported the diagnosis of histoplasmosis of Darling. It is believed that this is the fourth case to be reported in the United States and the eighth in medical literature.

7. Scott, A. V., and Li, P. K.: Kala-Azar in Children of North China, Arch. Dis. Child. **7**: 59 (April) 1932.
8. Hunter, O. B., and Copeland, E. P.: Case Reported by Dr. Hunter before the Baltimore Medical Society in 1923.
9. Meleney, H. E.: Personal communication to the authors.

Clinical Notes, Suggestions and New Instruments

TWO CASES OF ACUTE HEMOLYTIC ANEMIA WITH AUTO-AGGLUTINATION FOLLOWING SULFANILAMIDE THERAPY

WILLIAM ANTOPOL, M.D.; IRVING APPLEBAUM, M.D., AND LESTER GOLDMAN, M.D., NEWARK, N. J.

CASE 1.—A white man aged 34 complained of a "grippy" feeling for two days. Two years previously he had a subtotal gastrectomy performed for gastric ulcer. On the third day of his present illness, Aug. 27, 1938, the temperature rose and signs of consolidation were found at the base of the right lung. He was admitted to the hospital on that day with a temperature of 104.4 F., a pulse rate varying from 85 to 100 a minute and a respiratory rate of 25 a minute. An x-ray examination confirmed the diagnosis of consolidation of the right lower lobe. The sputum contained pneumococci which could not be typed with the available thirty-two type serums. Fifteen cc. of 5 per cent neoprontosil was given that day. Since no specific therapy could be used, it was decided to give repeated small

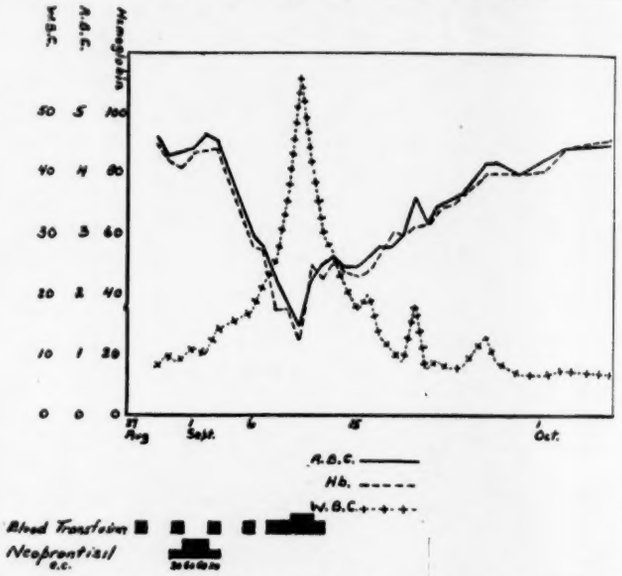

Fig. 1 (case 1).—Response of the blood to transfusions and neoprontosil.

transfusions. These were done August 28 and 31 and September 3 without any improvement. The blood was found to belong to group O. No difficulty was encountered with blood typing procedures at these times. Daily examination of the sputum showed the presence of pneumococci, which remained unidentifiable except on August 29, when type XV pneumococcus was obtained from the peritoneal exudate of a mouse injected with the sputum. Type specific rabbit serum (420,000 units) was given without any beneficial response. This organism was not found again in the sputum. The results of lung puncture and frequent blood cultures were negative. Starting September 1 and continuing through September 3, 160 cc. of neoprontosil, equivalent to 8 Gm. of sulfanilamide, was administered intramuscularly. The level of sulfanilamide in the blood in the morning specimens was never above 3.5 mg. per hundred cubic centimeters total. September 4, slight jaundice and hemoglobinuria were noted. This increased progressively, as did the urobilinogen in the urine. September 6 the icteric index was 83, the direct Van den Bergh reaction was positive with 4.7 mg. of bilirubin in 100 cc. of blood, and the hemoglobin content was 56 per cent. The fragility of the red blood cells remained normal. At this time it was decided to give another transfusion.

When the patient's blood was typed for the transfusion, the unwashed red cells were found to be intensely agglutinated by both group A and group B as well as by group O serums,

From the Laboratories and the Medical and Pediatric Services of the Newark Beth Israel Hospital.

despite the fact that the patient belonged to group O. This had not occurred with his blood on the occasion of his previous three transfusions. The agglutination disappeared in all three suspensions after incubation at 37 C., indicating group O. The agglutinins could be absorbed from the patient's serum by centrifuging a cooled suspension of red cells and serum. After

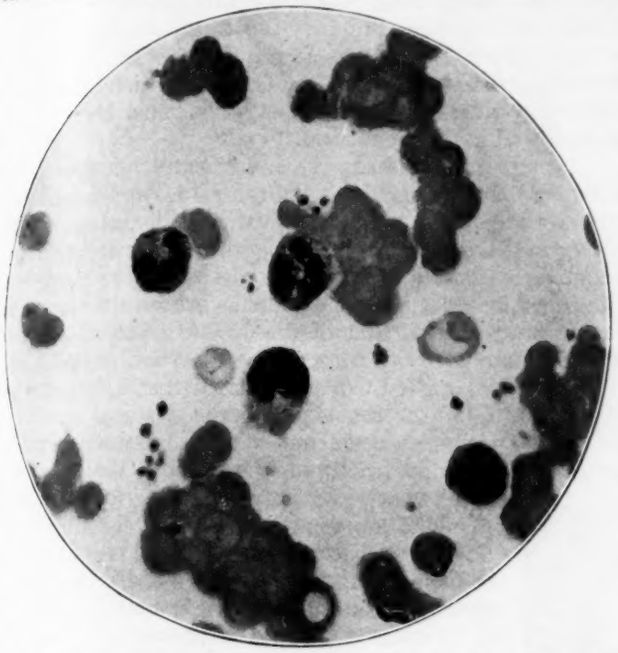

Fig. 2 (case 1).—Blood smear during hemolytic phase with auto-agglutination, showing intense clumping of red cells.

this procedure had been repeated several times, the supernatant fluid remained free of the agglutinins. Because of the auto-agglutinability at lower temperatures, the blood transfusions were given by the direct Lindemann method. There were no untoward transfusion reactions.

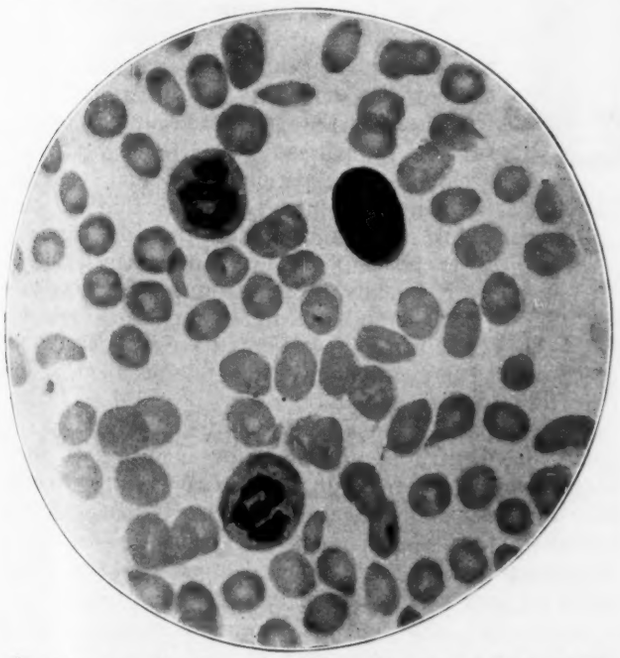

Fig. 3 (case 1).—Blood smears during convalescence, showing even distribution of red cells.

The anemia was rapidly progressive (fig. 1) and persistent and required eight blood transfusions, totaling 2,550 cc. of blood in seven days. The course was that of an acute hemolytic anemia. During the acute period leukocytosis was pronounced, at one time reaching 56,000 per cubic millimeter, with a moderate number of myelocytes and an occasional myeloblast. Because of the possible bearing the subtotal gastrectomy might have had on this condition, iron, liver, hydrochloric acid and intrinsic stomach factor were administered in addition to the transfusions. After five days the hemoglobin began to increase and recovery, so far as the blood changes were concerned, was prompt. The patient then made an uneventful though prolonged recovery from the pneumonic process.

Auto-agglutination at room temperature at times made it impossible to count the red blood cells without warming the counting chamber during the procedure. The auto-agglutination of the red cells is reflected in the blood smears (fig. 2), in which the erythrocytes were clumped and unevenly distributed during the period in which the phenomenon was evident. The early smears, as well as those obtained during convalescence (fig. 3), showed a comparatively uniform distribution of the red blood cells.

CASE 2.—A white boy aged 5 years was admitted to the Newark Beth Israel Hospital with a diagnosis of acute anemia. Five days prior to admission he complained of severe sore throat with a temperature of 104 F. Two days prior to admission he was given 90 Gm. of sulfanilamide over a period of thirty-six hours. The following day there developed an acute anemia and gray buccal patches. Laboratory examination at that time showed evidence of a moderately severe acute hemolytic anemia (fig. 4) with hemoglobinuria.

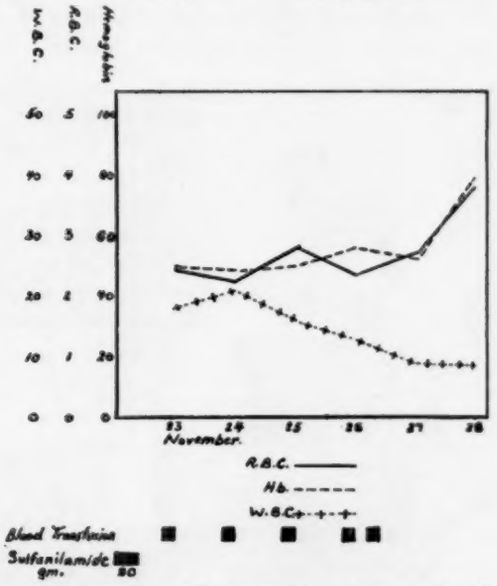

Fig. 4 (case 2).—Response of the blood to transfusions and sulfanilamide.

On admission his blood was typed for transfusion, at which time the erythrocytes were strongly agglutinated by both A and B serums, suggesting group AB. It was found that his red cells were also agglutinated by his own serum at room temperature. All these agglutination phenomena disappeared after incubation at 37 C. and his blood was found to belong to group O. This blood was identical in its reactions with that of case 1. He was promptly given 350 cc. of blood and an infusion of 5 per cent dextrose in saline solution. Blood cultures taken at this time were sterile. Because of our experience in case 1, a favorable prognosis was given despite the apparent ominous appearance of the patient. He was given daily transfusions for a period of four days in amounts varying from 300 to 350 cc. On the second day slight jaundice developed which gradually subsided.

The erythroid picture remained constantly low, despite the daily infusion of blood, until the fifth day, when it showed a prompt rise. Following this, recovery was rapid and uneventful (fig. 4).

SUMMARY AND CONCLUSIONS

1. In two cases of acute hemolytic anemia following sulfanilamide therapy, there was intense auto-agglutination.

2. Auto-agglutinins as a possible source of error should not be overlooked in typing the patient's blood.

3. Direct transfusions of compatible blood can be administered without danger if precautions are taken against cooling of the blood.

201 Lyons Avenue.

Special Clinical Article

THE AUTOMOBILE AND THE FRACTURED SPINE

CLINICAL LECTURE AT ST. LOUIS SESSION

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The relation of the automobile accident and the fracture—whether it is a fracture of a vertebra or of any other bone in the body—involves not only possible permanent injury but life as well. The proper procedures in the early history of a fracture and the immediate recognition of all local and general pathologic change are important. It is the duty of the medical profession to make the public conscious of the thousands who today are permanently disabled by automobile accidents, many because of carelessness in first aid. The public must be taught the importance of first aid. Without a doubt certain lives ended in the past by motor vehicle accidents could have been saved and permanent disabilities prevented by proper first aid. Even though certain groups, one being the automobile manufacturers, have introduced many safety first methods and devices, thereby lowering the number of accidents, such accidents can never be entirely eliminated, mainly because of the element of human carelessness.

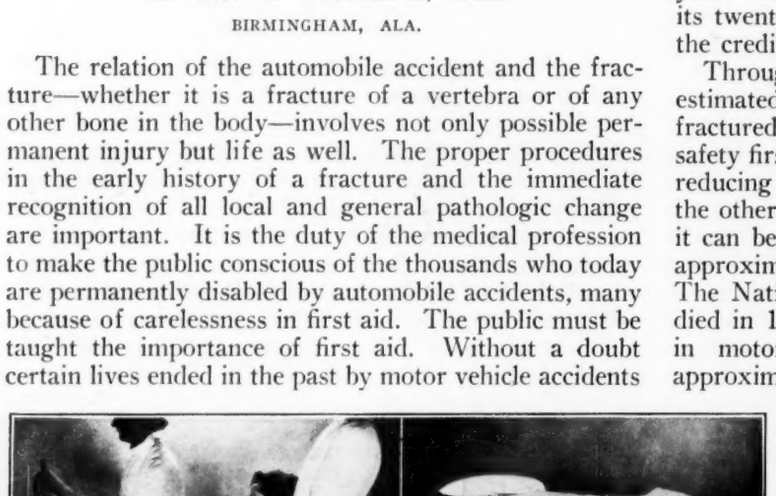


Fig. 1.—*A*, incorrect way of transporting a patient with an injured spine; severe damage can be done by carrying the patient in this manner. *B*, a proper method of transporting a patient with an injured spine when no stretcher is available. (*A* and *B* are from Jones, R. Watson: J. Bone & Joint Surg. **10:** 12 [March] 1928.) *C*, a simple type of litter placed over a hospital cart. Note the handles which run through each side of the litter. When not in use this litter can be folded and stored in a very small place. Instead of the handles any round pieces of wood can be used. *D*, patient on the litter before being lifted off the cart. This type of stretcher is very applicable in the case of injuries to the back. The patient should be carried with his face down.

The magnitude of the damage being done by automobile accidents in the form of fractures and permanent disabilities of the human body can be partly realized by reference to certain figures.[1] In the United States for the past few years there has been annually an average of one and one-half million people injured by the automobile. In 1937 there were approximately 39,500 people killed by motor vehicles—an all time high. In the last thirteen years more people in the United States have died as the result of automobile accidents than were killed in all American wars. In 1938 there was a reduction in the number of deaths from automobile accidents to 32,400. This was the first time in six years that there had been a reduction in fatal automobile accidents and only the second time since the automobile became a factor in American life that the total of traffic deaths in the United States was lower than in the preceding year. To the National Safety Council, which celebrated its twenty-fifth anniversary last year, must go most of the credit for this reduction.

Through an authoritative investigator[2] it has been estimated that in the United States 13,000 spines were fractured in 1937. Since industry today, through its safety first measures, is reducing all injuries and thereby reducing the number of fractured spines, but since, on the other hand, automobile injuries are on the increase, it can be estimated that of the 13,000 fractured spines approximately 8,000 were caused by motor vehicles. The National Safety Council[1] stated that 1,160 people died in 1937 as the result of fractured spines received in motor vehicle accidents. These estimates give approximately one fractured spine every hour during the twenty-four hours of the day as the result of motor accidents, of which three can be expected to cause death. It is impossible to estimate the percentage of permanent disabilities resulting from the nonfatal fractures.

Too frequently are superficial examinations made, the result being that fractures of the spine are often overlooked. Occasionally a definite fracture of two or more adjacent vertebrae with one or more normal vertebrae between them may occur from a single accident. Such conditions make it imperative that the surgeon examine the entire spine for fractures.

With spinal fracture there is always a backache of varying severity. Frequently there is no deformity of the back. Many fractures of the spine are not recognized because the patient is able to walk after the accident. The patient often underestimates his injury, frequently stating that he has a "kink" in his back and that the disability is of no importance. Such injuries, however, usually become more painful as time goes on and eventually medical advice has to be sought. Patients have walked into the office several days after an automobile accident, suffering from backache, and on doing physical and x-ray examinations I have found definite fractures of the spine, frequently of the anterior compression type. Regardless of the insignificance of the injury, whether it is direct or indirect, one should feel suspicious of a spinal fracture when pain in the back is present. It is important to take an oblique roentgenogram in certain cases as well as the lateral and anteroposterior views.

To the lay mind and unfortunately to many medical minds as well, a broken back or neck is a broken back or neck and as such is a dreadful accident which results in sudden death or complete and permanent paralysis below the level of the lesion, with the patient relegated to permanent total disability. This gloomy point of view is the heritage of the days before the introduction of the x-rays, when only the severe fracture dislocations of the spine with extensive damage to the spinal cord

From the Sherrill and Conwell Orthopaedic Clinic.

Read in the Surgical Division of the General Scientific Meetings at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 16, 1939.

1. National Safety Council, Chicago: Personal communication to the author during January 1939.

2. Davis, A. G.: Personal communication to the author during November 1938.

were recognized as spinal injuries. At the present time it is known that more than one half of the fractured spines are not accompanied by paralysis and that with adequate treatment most patients may be expected to recover and return to their former occupations.[3]

It should be emphasized that fractures of the spine are not necessarily dangerous on account of the skeletal injury but are dangerous to life when associated with damage to the spinal cord or other visceral or skeletal injuries. On the other hand, it is to be emphasized that skeletal injury may cause prolonged disability if proper treatment is neglected. Pressure on the cord is often effectively relieved by early reduction and immobilization, which tend to restore and maintain the normal diameter of the spinal cord. In certain cases paralysis clears up spontaneously, but anatomic lesions of the cord may be made permanent by irreparable injury to the cord itself or by bony pressure to the cord, and when such conditions are present consultation with capable surgeons should be requested.

Many types of vertebral fractures result from automobile accidents. Only the most common type, the compression fracture, will be discussed. More than 50 per cent of all fractures of the vertebrae are of this type, and it has been my experience that the percentage is greater for fractures following automobile accidents. More than 70 per cent of anterior compression fractures occur at the dorsolumbar junction. Most such fractures are received by suddenly sitting down on the buttocks or encountering forceful pressure from above on the shoulders, so that the shoulders are compressed forward and a "jackknifing" position of the body is produced. Such trauma can easily happen when an automobile is turned over or an occupant is thrown from the car. Another type of accident which frequently causes an anterior compression fracture is the hitting of a speed breaker or similar obstructions in the road so that the occupant is thrown up, the force producing either a fracture of a cervical vertebra by the head striking the roof of the car or a compression fracture low in the spine by the sudden downward force directed on the buttocks.

Davis [2] has said:

> I have made no other tests in relation to the automobile accident as a cause of compression fractures of the spine but have often referred to the fact that a person driving a car at 40 or more miles an hour thinks of the car as representing the velocity, while of course the torso is under the same velocity. The torso is usually braced somewhat by the legs, and in the sitting position the solid weight of the chest, shoulder girdle and head is thrown forward at the time of impact. This affords an explanation of the "whiplash" or "jackknifing" occurring at the dorsolumbar junction. It also explains the dislocations in the cervical part of the spine, where the weight of the head is involved in the "whiplash" action; i. e., the patient is sitting with the buttocks forward in the seat and the shoulders braced against the upper part of the seat, and the weight of the head continues its momentum forward on the torso at the time of impact.

A compressed vertebra may be and usually is impacted so firmly that considerable force is necessary to loosen the impaction and restore the normal height of the vertebral body. The strong anterior common ligament, which is continuous across the disks and vertebral body, usually remains intact, although it may be stripped up from the anterior surface of the body. Davis [4] has shown that by remaining intact the anterior ligament enables the surgeon to correct the deformity by hyperextending the spine with little fear, in most instances, of damaging the cord or pulling the vertebrae apart, except when there is a definite fracture or a fracture dislocation in the posterior arc. Occasionally in such injuries when the hyperextending force continues to act the vertebra above is displaced forward or forward and to one side on the vertebra below. When this occurs there is a fracture of the posterior arc or of the articular facets and the spinal cord tends to be crushed between the posterior border of the body of the vertebra below and the posterior arc of the vertebra above the point of fracture. In rare instances there may be a tearing of the interspinous ligaments or a splitting of the spinous process with subluxation or even dislocation of the articular facets, injuring the spinal cord and nerve trunks.

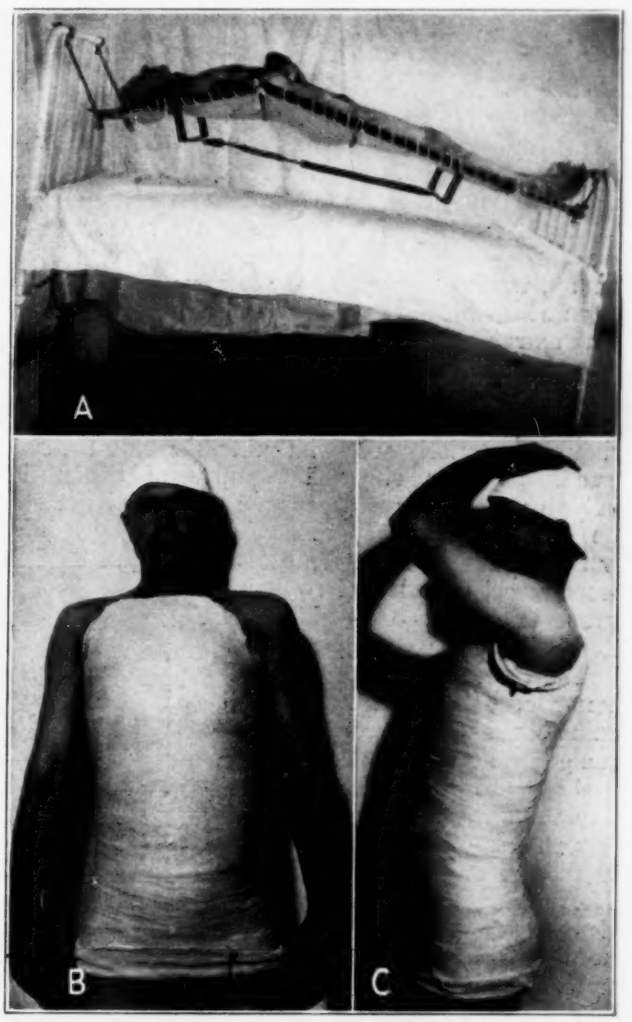


Fig. 2.—*A*, the modified Herzmark hyperextension frame in use. *B* and *C*, ambulatory plaster fixation for anterior compression fractures in the dorsal and lumbar regions. Note the maintenance of hyperextension, as shown in the side view. This type of cast can be worn during the whole convalescence, or a Taylor back brace or its modification can be substituted in the course of convalescence. (*B* and *C* are from Key, J. A., and Conwell, H. E.: The Management of Fractures, Dislocations and Sprains, ed. 2, St. Louis, C. V. Mosby Company, 1937, p. 320.)

In certain spinal injuries there is a variable amount of damage to the intervertebral disks [5] in the vicinity of the fracture. These disks may be injured and protrude anteriorly or into the cartilage plate of the vertebrae above or below, or they may rupture into the

3. Key, J. A., and Conwell, H. E.: The Management of Fractures, Dislocations and Sprains, ed. 2, St. Louis, C. V. Mosby Company, 1937.

4. Davis, A. G.: Tensile Strength of the Anterior Longitudinal Ligament in Relation to Treatment of 132 Crush Fractures of the Spine, J. Bone & Joint Surg. **20**: 429-438 (April) 1939.

5. Geist, Emil S.: The Intervertebral Disk, J. A. M. A. **96**: 1676 (May 16) 1931.

spinal canal, causing pressure on the cord. Batts [6] states that "permanent protrusion of the disk substance may occur in any direction." Of fifty spines examined by him post mortem, 20 per cent showed protrusion of the disk into the bodies of the adjacent vertebrae, 16 per cent rupture of the nucleus pulposus posteriorly into the spinal canal and 6 per cent anterior protrusion. Batts further states that "the terms 'protrusion of the disk' and 'rupture of the nucleus pulposus' are not used interchangeably. Protrusion may refer only to the annulus fibrosus, in which there is no solution of continuity, while a rupture of the nucleus pulposus refers to an actual break in the annulus or the cartilage plate with extrusion of the nuclear contents." He concludes that "rupture of the nucleus pulposus is a common lesion. It may occur in any direction: However, as commonly referred to it is usually taken to mean a rupture posteriorly only with protrusion into the spinal canal." I have observed ruptures of the nucleus pulposus into the cartilage plate which did not show up in roentgenograms immediately after the injury but several weeks or months later were revealed by lateral roentgenograms taken on account of backache developing after an apparent cure.

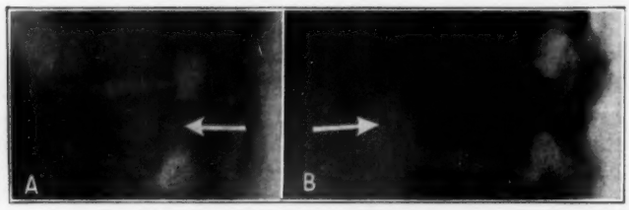


Fig. 3.—*A*, Lateral view showing marked anterior compression fracture of the first lumbar vertebra. *B*, view taken immediately after reduction by hyperextension of the spine as described in the text. The contour of the vertebra is restored. The patient had an uneventful recovery, with good functional results.

The deformity present in an anterior compression fracture of the spine should be corrected, provided the general condition permits. Several technics for carrying out hyperextension with or without traction have been described, one being the method of Davis.[7] I use a modified Herzmark frame on which the patient is placed after admission to the hospital as soon as all necessary treatment for shock has been given. The patient is placed on the frame with the frame in full extension. The angle for bringing about convexity of the spine is placed opposite the deformity of the spine. The turnbuckle on the frame is gradually tightened, which convexes the frame more and more, thereby bringing about hyperextension of the body. The hyperextension should be produced gradually, and usually at the end of fifteen or twenty minutes full correction of the deformity is obtained. Correction of the deformity should be controlled by lateral roentgenograms. All these procedures should be done after the patient has been given sufficient opiates to make him comfortable. I have not found it necessary to give general anesthetics; however, in certain cases I have used avertin with amylene hydrate. At the limit of hyperextension the patient usually feels tension in the abdominal muscles, and physical examination will usually disclose disappearance of the prominence of the spine at the site of the fracture. In certain instances it may be necessary to apply head and foot traction, combining this with hyperextension.

I have seen paralytic ileus develop; this becomes a major surgical factor and demands immediate attention. None of our cases have proved fatal, but there are reports of death from this complication. I feel that too severe manipulative procedures or the too early application of tight body casts is a predisposing factor.

After the reduction the patient may be allowed to remain on the frame for a few days, and the plaster cast may then be applied. In certain instances anteroposterior plaster shells may be used. If a cast, circular or shell-like, is used, the patient's back should be kept in a hyperextended position while it is being applied.

If the economic condition will permit, I prefer to have the patient remain on the frame for five or six weeks and then to apply a snug-fitting body cast, keeping the patient's back in a hyperextended position and placing the plaster high up in front in order to retain the hyperextension of the spine. This cast is worn for five or six weeks, and then a properly fitted Taylor back brace is applied and worn until roentgenograms show complete restoration of the crushed vertebra.

I have had several patients in whom renal stones developed, and in some they developed with startling promptness after the injury. In two the stones occurred bilaterally. It has been well known for years that a fracture of the vertebra or multiple fractures of the body may be followed by the formation of renal calculi. The earliest report of such a case in English literature was contributed by Costello [8] in 1833. He stated that Earle [9] had described several cases of lithiasis in which he attributed the condition to a subacute inflammatory condition of the kidneys induced by injuries to the lumbar region. I have no specific explanation for the occurrence of renal stones in association with spinal

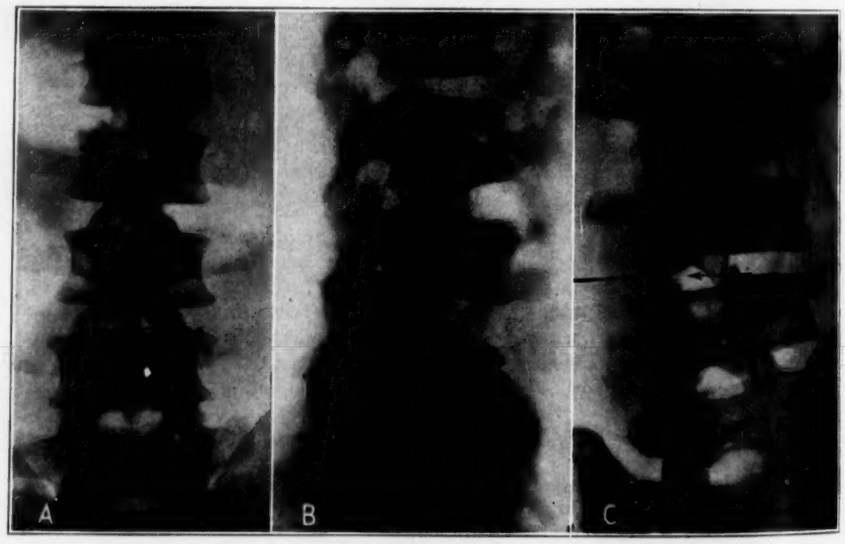


Fig. 4.—*A* and *B*, normal anteroposterior and lateral views of an injured back. On account of persistent pain in the back and other physical evidence suggestive of a fracture of the spine, further investigation was carried out and an oblique roentgenogram was made. *C*, oblique view, showing a fracture in the posterior arc.

6. Batts, Martin, Jr.: Rupture of the Nucleus Pulposus: An Anatomical Study, J. Bone & Joint Surg. **21**: 121 (Jan.) 1939.
7. Davis, A. G.: Fractures of the Spine, Am. J. Surg. **15**: 325 (Feb.) 1932.
8. Costello, W. B.: Case of Stone in the Bladder from Injury to the Loins; Meningitis, Lancet **2**: 109, 1833.
9. Earle, H.: Renal Calculi, Med.-Chir. Tr., London **11**: 211, 1821.

injuries. I [10] reported a series of 100 cases of anterior compression fractures of the spine without cord injury, in eight of which renal stones developed. Oehlecker [11] says that "the blood clot which accompanies or follows an injury to the kidney does not alone suffice to explain the formation of calculi, since the clot is often changed or even absorbed while the stone forms, but that there must be in addition a disturbance of the colloid-crystalloid equilibrium of the urine with resultant precipitation of the urinary salts about a central nucleus or framework of red blood cells or fibrin in the clot." Goldstein and Abeshouse [12] state: "there are many factors concerned in the formation of renal calculi after injuries of the vertebrae and cord. The most important consideration is the condition of the kidney before and after the accident. . . . In some cases the formation of calculi is dependent on a primary intrinsic lesion of the kidney, i. e. a rupture or tear of the renal parenchyma with extravasation of blood into the renal pelvis which occurs at the time of the injury to the vertebrae and cord."

It is not within the province of this paper to discuss in detail the estimation of the percentage of disabilities due to spinal fractures resulting from automobile or other accidents. I know, however, that many so-called spinal injuries following automobile accidents are grossly exaggerated by the patient. Mock [13] states that "medicolegal evils undoubtedly started when medicine first went into court to prove or disprove sanity, responsibility for personal injury and the like. The limits of ethical legal practice are broad, those of the science of medicine more restricted. Physicians are by training experts in the science of medicine, but in the art of medicine, judgment, experience and integrity are factors and may lead to a divergence of opinion among physicians." Stern [14] states that "the mental attitude of the patient greatly influences his ability to carry out the work which his disability, age and occupation should warrant his performing. Malingering and deliberate exaggeration must always be summarily condemned, but genuine psychoneurosis must at least be viewed in a sympathetic manner. . . . An examining physician must at all times be on his guard against the obvious fallacy of calling every hidden and unexplained condition a neurosis or exaggeration, and it is my opinion and constant practice never to make a diagnosis of neurosis until repeated examinations have fully demonstrated the lack of objective corroborative evidence of the actual existence of disability. Often actual disability of a minor grade and psychoneurosis coexist."

I feel that the psychoneurotic tendency of the patient with a fractured spine is an individual problem and that he should be given a thorough explanation of his condition by his physician, with assurance that he has an excellent chance to recover normal function. Confidence of the patient in the physician is essential.

214-222 Medical Arts Building.

10. Conwell, H. Earle: Acute Fractures of Spinal Vertebrae Without Cord Injury: Report of 100 Cases, Wisconsin M. J. **31:** 230 (April) 1932; Acute Vertebral Fractures Without Cord Injury, South. M. J. **25:** 141 (Feb.) 1932.

11. Oehlecker, F.: Renal Calculi of Traumatic Origin, Zentralbl. f. Chir. **59:** 1264 (May 21) 1932.

12. Goldstein, A. E., and Abeshouse, B. S.: Urinary Calculi and Bone Diseases, Arch. Surg. **31:** 943-981 (Feb.) 1935.

13. Mock, Harry E.: Medical Testimony, Journal of Jurisprudence **1:** 119, 1938.

14. Stern, Walter G.: Estimation of Disability after Injuries to Bones and Joints, J. A. M. A. **112:** 293 (Jan. 28) 1939.

Special Article

CONFERENCES ON THERAPY

TREATMENT OF POISONING

NOTE.—*These are actual reports, slightly edited, of conferences by the members of the Departments of Pharmacology and of Medicine of Cornell University Medical College and the New York Hospital, with collaboration of other departments. The questions and discussions involve participation by members of the staff of the college and hospital, students and visitors.*

DR. MCKEEN CATTELL: The treatment of poisoning in man offers problems to the physician which at times will call on all the resources at his command. In the first place the diagnosis is apt to be difficult, and in addition to the physical signs and symptoms the physician will often need to call on his ability as a detective. Further, the conditions under which treatment must be employed are likely to be difficult. Quick decisions are necessary, often in the midst of a much disturbed atmosphere. Finally, while many of the general principles of treatment are well worked out, many difficulties arise when it comes to the choice of a specific antidote and the amount which shall be administered, and the literature on the subject gives one very little help.

It is hoped that during the present session we shall be able to crystallize the more important information regarding drug therapy in some common forms of poisoning.

We are fortunate in having Dr. Helpern here today. He will tell us something of the sort of problems he has met with in his wide experience in the Medical Examiner's Office, and perhaps give us some points in the recognition of poisoning by different drugs.

DR. MILTON HELPERN: In the year 1937, 898 persons in New York City died of poisoning. This incidence represents 17.2 per cent of the total of 5,221 violent or unnatural deaths [1] investigated by the Office of the Chief Medical Examiner during that year, or 1.2 per cent of the total of 77,465 deaths from all causes in the entire city. These 898 cases of fatal poisoning do not include 460 deaths from acute and chronic alcoholism and 110 deaths from various anesthetics.

Accurate statistics as to the number of persons poisoned who did not die are not available. A physician who treats a patient in private practice for poisoning resulting from accident or an attempt at suicide is not required to report the case to the authorities if the patient does not die. I do not know of any central bureau where all cases of nonfatal poisoning observed in private and hospital practice are reported. Despite this lack of complete statistical information concerning the nonfatal cases of poisoning, the 898 fatal cases and the records of successfully treated cases in the many hospitals of the city indicate a very large total number of poisonings and a clinical problem of considerable magnitude.

The accompanying tables are condensed from the latest available (1937) Annual Report of the Chief Medical Examiner of New York City and list the different types and the incidence of fatal poisonings as they occur in a large cosmopolitan city.

All violent deaths, including those caused by poison, are classified as homicidal, suicidal or accidental. The individual poisons causing death and their frequency

1. A total of 16,313 deaths were investigated by the Office of the Chief Medical Examiner in 1937.

are also listed in each classification. Violent deaths are designated as homicidal or suicidal only when the necropsy and circumstances surrounding the case warrant such a designation. In some instances of fatal poisoning, as well as in other forms of violent death, the circumstances surrounding the death cannot be ascertained and the qualification of the death must remain undetermined. Some of these undetermined cases are probably suicidal and some possibly homicidal in nature. To simplify the tables, the accidental and undetermined cases have been grouped together.

*Incidence of Fatal Poisonings in New York City in 1937 **

		Poisoning	%
Violent and unnatural deaths (all causes)†			
Homicidal	350	10	2.9
Suicidal	1,195	561	46.9
Accidental (and undetermined)	3,676	327	8.9
Totals	5,221	898	17.2
Total deaths (all causes)	77,465		
Homicidal poisoning		total 10	
Carbon monoxide (illuminating gas)		8	
Chloral hydrate		1	
Cyanide		1	
Suicidal poisoning		total 561	
Carbon monoxide		428	(76%)
Illuminating gas	419		
Motor exhaust	9		
Cyanide		26	(5%)
Barbiturates		25	(5%)
Phenols		20	(3.5%)
Lysol	18		
Phenol	2		
Mercuric chloride		12	(2.5%)
Arsenic		7	
Phosphorus		3	
Hydrochloric acid (conc.)		10	
Nitric acid		1	
Ammonia		5	
Iodine		4	
Sodium hydroxide (lye)		1	
Morphine		6	
Nitrobenzene		2	
Chloroform		2	
Accidental and undetermined poisoning		total 327	
Carbon monoxide		215	(65%)
Illuminating gas	178		
Coal gas	24		
Motor exhaust	13		
Heroin (associated with narcotism)		38	
Arsphenamine and neoarsphenamine		21	
Methyl alcohol		8	
Barbiturates		7	
Arsenic		3	
Lead		4	
Radium		1	
Phosphorus		1	
Carbon tetrachloride		2	
Chloral hydrate		1	
Chloroform		1	
Nitric oxide		2	
Methyl salicylate		4	
Paraldehyde		4	
Dinitrophenol		1	
Acetanilid		1	
Sodium hydroxide (lye)		2	
Lysol (saponated solution of cresol)		2	
Oxalic acid		1	
Fluoride		1	
Strychnine		2	
Morphine		3	
Codeine		2	

* Abstracted from Annual Report of the Chief Medical Examiner.
† Exclusive of 460 deaths from acute and chronic alcoholism and 110 deaths during one or another form of anesthesia.

There were 350 homicidal deaths in 1937 and less than 300 in 1938. Comparing this number with 569 in 1931, 565 in 1932 and 524 in 1933, a steady sharp drop in the number of homicides since 1933 is noted, coinciding with the repeal of the prohibition laws.

Only ten homicides in 1937 were caused by poisoning, or slightly less than 3 per cent; about the same number of cases of poisoning homicides have occurred each year since 1918 despite considerable variations in the total number of homicidal deaths. Eight of the ten homicidal poisonings were caused by carbon monoxide in illuminating gas and were generally associated with the suicide of the perpetrator, usually several deaths occurring in one family. Illuminating gas has been utilized to kill intoxicated persons apparently for purposes of collecting insurance. Such homicides may be carried out with considerable ease in a room equipped with gas fixtures, the scene being arranged to suggest an accidental or suicidal death.

Chloral hydrate has been added secretly as "knock out drops" to food or drink to render a person helpless in order to facilitate robbery or rape and it may cause death.

Cyanide has been forcibly fed to a helpless victim by a psychopathic individual.

In 1938 there were two homicidal arsenic poisonings perpetrated by a feebleminded girl who placed rat poison in coffee which the victims drank. Clinically these cases were not recognized as arsenic poisoning but were diagnosed as food poisoning and botulism.

Homicidal poisonings are rarely diagnosed correctly during life.

There were 1,195 suicidal deaths in 1937. Of these 561, or 47 per cent, were caused by one or another form of poison; 428, or 76 per cent, of the suicidal poisonings resulted from the inhalation of carbon monoxide. Twenty-six persons committed suicide by ingesting cyanide, usually in the form of the sodium salt. This poison is taken by those who have access to it, photographers, chemists, jewelers. Sometimes the cyanide is dissolved in whisky. Persons who have taken cyanide are usually found dead or die before medical aid can be given. Not infrequently, friends or relatives of the deceased person attempt to disguise the true nature of the death by removing all traces of poison and suicide notes from the vicinity of the deceased, offering information which might lead an incautious medical examiner to attribute death to natural causes.

There were twenty-five suicides of persons who ingested large amounts of various barbiturate preparations. Such suicidal poisonings are definitely on the increase, usually occurring in persons who have available large quantities of various barbiturate compounds, prescribed as medication for disturbed mental states, insomnia or nervousness. The very condition which the medication is supposed to alleviate may prompt the patient to take a suicidal dose of the remedy, usually the contents of a whole bottle of tablets of phenobarbital, barbital, nembutal, amytal, medinal, dial, allonal or whatever preparation happens to be in vogue at the time.

In 1937 there were twenty suicidal poisonings caused by ingestion of phenol compounds, eighteen of lysol (saponated solution of cresol) and two of phenol. In 1932 there were forty-three lysol deaths and two caused by phenol.

Mercuric chloride caused death in twelve suicides and arsenic in seven, the latter being accomplished by the ingestion of arsenic trioxide in rat poison. There were three cases of phosphorus poisoning. Yellow phosphorus is an ingredient of roach paste, in which it can be detected by its characteristic odor.

Inorganic corrosive poisons are ingested with suicidal intent. Thus there were ten deaths from the ingestion of strong hydrochloric acid and one from nitric acid. The corrosive action of concentrated hydrochloric acid on the stomach mucosa is very severe and presents a striking gross picture. The mucosa becomes thickened and exhibits an intense brown and black discoloration. There were five corrosive poisonings caused by strong ammonia and five by sodium fluoride, which is the toxic ingredient in the blue roach powder so extensively and sometimes carelessly used by insect exterminators. Iodine swallowed in the form of the tincture caused

four suicidal deaths. One case of poisoning was caused by swallowed lye. In many of the corrosive poisonings the regurgitation and inhalation of the corrosive may cause an asphyxiating laryngeal edema and a severe aspiration bronchopneumonia.

There were six cases of suicidal morphine poisoning. In some instances huge doses, as much as 20 or 30 grains, were injected intravenously. In other cases the drug was taken by mouth. Nitrobenzene, available in shoe dye, caused death in two cases; ingested chloroform also caused two deaths.

In the group of 327 accidental poisonings and those in which the circumstances are undetermined, the inhalation of carbon monoxide occurring in illuminating gas, motor exhaust fumes and coal gas is responsible for 215, or 65 per cent, of the total.

There are forty-one deaths of chronic heroin and morphine addicts. It is difficult to be certain that death was due to an overdose of the drug in all these cases, as these addicts have developed a marked tolerance to large doses of heroin or morphine by long habituation. Accidents may occur with injection of large doses of the drug after a period of withdrawal during which time tolerance may have diminished or disappeared. The cause of death in narcotic addicts is not easy to determine. Many narcotic addicts die of intercurrent disease which may be related or unrelated to their addiction. For example, since September 1933 more than 100 fatal cases of artificially acquired estivo-autumnal malaria in heroin addicts using the intravenous route for injection of the drug have been examined post mortem in the Office of the Chief Medical Examiner. Other addicts die of sepsis and tetanus from infected needle punctures. Death from chronic morphine and heroin poisoning can be established only after complete autopsy and chemical examination.

There were twenty-one deaths associated with the therapeutic administration of arsphenamine and neoarsphenamine for the treatment of syphilis. The pathologic picture varies; one encounters dermatitis exfoliativa, myelo-encephalorrhagia, acute yellow atrophy of the liver, aplastic anemia and occasionally, in deaths occurring soon after a single injection, no characteristic lesion.

Eight deaths from methyl alcohol poisoning are listed. These cases occur sporadically and were much more numerous during the days of prohibition. An indigent intoxicated person may purchase wood alcohol as such and then drink it. Other cases result from the drinking of an alcoholic beverage called "smoke," a cloudy liquid made by mixing water with "solid alcohol," a substance which contains methyl alcohol and is used for heating purposes. Persons who imbibe this beverage are alluded to as "bottle babies" and many such habitués seem to survive its immediate toxic effects for long periods.

There were seven deaths from barbiturate poisoning in which the circumstances could not be definitely determined. Most of these were probably suicidal. There were three accidental fatal arsenic poisonings. Accidental metal poisonings are apt to occur in young children and creeping infants who are carelessly allowed access to rodent killing arsenic preparations or insecticides containing yellow phosphorus; these substances may be smeared on or mixed with food and placed in various parts of the home, where they are accessible to children. Some children eat lead paint off toys, chairs and metal cribs and die of acute lead poisoning.

The single case of chronic radium poisoning occurred in a person who was formerly a painter of luminous watch dials, who, while engaged at this occupation over a period of time, ingested minute amounts of radioactive material in the paint during the process of pointing the paint brush in the mouth. The swallowed radioactive material accumulated in the body of the victim, especially in the bones, causing a variety of ill effects. The etiology, symptomatology, pathology and toxicology of occupational radium poisoning were first described by Martland [2] and his associates in 1925 and 1926 and Martland has ably reviewed the entire subject in subsequent articles.

CARBON MONOXIDE POISONING

Carbon monoxide poisoning occurs much more frequently than all the other forms of poisoning combined. It has already been pointed out that eight out of ten homicidal poisonings were caused by carbon monoxide; 428, or 76 per cent, of the 561 suicidal poisonings and 215, or 65 per cent, of the 325 accidental and undetermined poisonings were caused by the inhalation of this gas.

Illuminating gas was the source of the carbon monoxide in all of the homicidal cases and in 419 of the 428 suicidal cases. In the remaining nine suicidal cases the source of the carbon monoxide was automobile motor exhaust fumes.

Carbon Monoxide Deaths in New York City

Year	Suicides	Accidental and Undetermined	Homicides
1918	311	543	9
1919	285	442	6
1920	288	438	8
1921	291	337	3
1922	298	427	6
1923	334	543	6
1924	334	546	5
1925	388	631	3
1926	371	825	7
1927	458	634	15
1928	521	594	3
1929	582	539	11
1930	617	448	13
1931	642	327	12
1932	664	310	6
1933	540	223	11
1934	471	271	4
1935	419	254	5
1936	463	239	5
1937	429	215	8

The peak year for suicidal carbon monoxide poisoning was 1932, when there were 664 cases out of a total of 1,609 suicides. Since then there has been a gradual drop in the total number of suicides and a corresponding drop in the number of suicides caused by carbon monoxide. The inhalation of carbon monoxide in the form of illuminating gas continues as the most common method of committing suicide.

Of the 215 accidental and undetermined carbon monoxide poisonings, 178 resulted from the inhalation of illuminating gas, thirteen from motor exhaust fumes and twenty-four from coal gas escaping from defective stoves and flues. The number of accidental and undetermined carbon monoxide asphyxiations is considerably less than it was a few years ago. The peak year was 1926, when there were 825 such cases recorded. In 1925 there were 631, in 1927 634, and then a steady decrease up to 1937. Since 1932, the peak year for carbon monoxide suicides, the incidence of carbon monoxide deaths has dropped in both the suicidal and accidental categories.

2. Martland, H. S.; Conlon, Philip, and Knef, S. P.: Some Unrecognized Dangers in the Use and Handling of Radioactive Substances, J. A. M. A. **85**: 1769 (Dec. 5) 1925. Martland, H. S.: Occupational Poisoning in Manufacture of Luminous Watch Dials, ibid. **92**: 466 (Feb. 9), 552 (Feb. 16) 1929; Occurrence of Malignancy in Radioactive Persons, Am. J. Cancer **15**: 2435 (Oct.) 1931.

Accidental carbon monoxide asphyxiations may be caused by defective gas fixtures and appliances and may also result from carelessness on the part of an individual. For example, an elderly or a drunken person goes to the stove, turns on the gas and then forgets to light it. He may then seat himself near the stove waiting for a pot to boil and is rapidly asphyxiated.

In most cases of carbon monoxide poisoning the diagnosis is easy or obvious. The victim is discovered dead or alive in a gas filled room with one or more of the gas jets turned on.

If the victim is alive, he is removed from the poisonous atmosphere and various measures are employed to resuscitate him. In some cases recovery takes place, while in others there is a fatal outcome despite the most energetic attempts at restoration.

An important thing to remember about carbon monoxide poisoning is that in many cases diagnosis is not obvious from the circumstances. A partially asphyxiated person may be brought to the hospital and either recover or die without any one being aware of the true nature of the illness. Undiagnosed and unsuspected cases of carbon monoxide poisoning occasionally are discovered during the routine autopsy in the medical examiner's office. If the body is that of a person who has been found dead, the characteristic pink or rose colored postmortem lividity and the cherry red color of the organs and blood immediately make the diagnosis apparent to an experienced observer. In an undiagnosed case in which survival has been long enough for the carbon monoxide to disappear from the body, the postmortem diagnosis is more difficult but is suggested by the finding of a bilateral symmetrical softening of the globus pallidus, which occurs in almost every case of acute asphyxiation in which survival in coma has lasted for more than twenty-four hours. This lesion is the most constant finding in delayed deaths from carbon monoxide poisoning; other lesions occur but with much less frequency.

To illustrate the unusual circumstances under which cases of carbon monoxide poisoning occur and how cases may be brought to the hospital for treatment without any suspicion as to the actual nature of the illness, I will relate the following story:

About six months ago, in Manhattan, four persons in a rooming house sat down to a dinner consisting of pork chops, spaghetti, string beans and other victuals. They all ate rather heartily. Immediately after dinner, one person who partook of all the food went outdoors for a walk. He did not become ill. Shortly after his departure the other three persons who had also finished their dinner became ill. They began to vomit and had diarrhea. One person went to the lavatory, where he collapsed and died. The other two ill persons were removed to a hospital in an ambulance. Now it seems logical to conclude, when several persons become ill with digestive symptoms immediately after partaking of the same food, that the food is responsible for the illness. A diagnosis of food poisoning was therefore made in this case and a police detective arrested the butcher who had sold the pork chops and accused him of selling tainted meat. The body of the man who was found dead in the lavatory was sent to the morgue for autopsy as a case of food poisoning. The autopsy, however, definitely revealed that death had been caused by carbon monoxide poisoning. The lividity and the organs and blood were pink because of the presence of carboxyhemoglobin. A chemical examination revealed that 70 per cent of the hemoglobin was saturated with carbon monoxide. As soon as the cause of death was apparent, the hospital to which the other two victims were taken was notified. The patients were recovering from what had been diagnosed as food poisoning. Carbon monoxide poisoning had not been suspected. Blood had not been taken for chemical examination. The carbon monoxide in this case escaped from the defective flue of a coal furnace in the basement. The diagnosis of nonfatal carbon monoxide poisoning is not easy in the absence of a history of exposure to the gas. With large concentrations of carboxyhemoglobin the skin may show a pinkish flush, but this is not always apparent in the living patient as it is in the suggillations of the dead body. Carbon monoxide poisoning should be suspected in obscure cases of coma attended by marked spasticity of the extremities and the presence of hyperactive and abnormal deep reflexes, clonus and signs suggesting bilateral involvement of the pyramidal tracts.

To establish the diagnosis in a nonfatal case it is necessary to remove a sample of blood for qualitative and quantitative chemical examination for the presence of carboxyhemoglobin. The blood should be taken just as soon as the possibility of carbon monoxide poisoning is considered. A simple qualitative test may be carried out on a few drops of blood by diluting and then adding a few drops of 10 per cent sodium hydroxide solution to the dilute solution. A light pink solution will result and persist after the addition of the alkali. Normal blood in the same dilution will turn a greenish brown on the addition of the alkali. The qualitative tests as well as the spectroscopic tests for carboxyhemoglobin will give positive results only if the concentration of carboxyhemoglobin in the blood is more than 10 per cent.

DR. HARRY GOLD: How much blood do you take?

DR. HELPERN: About 20 cc. is withdrawn and placed in a small, clean, tightly stoppered bottle. Actually the chemist does not require more than 5 cc. for qualitative and quantitative determinations, but enough should be taken to permit duplicate determinations.

DR. GOLD: Do you let the blood clot?

DR. HELPERN: The blood should not be permitted to clot. Usually in fatal cases with high concentration of carboxyhemoglobin no precautions are necessary and the blood will remain fluid. In nonfatal cases, with moderate concentrations of carboxyhemoglobin, the blood may clot in the container unless a small amount of ammonium oxalate or sodium citrate or other anticoagulant is added. It is best to place such blood in a small bottle the inside of which has been moistened with a saturated solution of ammonium oxalate, as in collecting blood used for other chemical analyses. If an anticoagulant is not available, the blood specimen can be shaken in a small, tightly corked bottle. Should the blood clot, qualitative tests can be carried out on the coagulum, which will contain the carboxyhemoglobin. The quantitative tests with clotted blood are more difficult to carry out.

The important thing to remember in a nonfatal case is to take the blood as soon as possible after the diagnosis has been made, since carbon monoxide is rapidly eliminated from the blood after a person who has been exposed to it has been removed from the environment of the gas and allowed to breathe ordinary fresh air. The elimination of carbon monoxide occurs even more rapidly if respirations are stimulated and oxygen administered. In fresh air, about half the carbon monoxide in the system will be eliminated during the first hour of survival; after twenty-four hours, all the carbon monoxide will have disappeared. Thus in such a case

it may be difficult from the medicolegal standpoint to prove that carbon monoxide poisoning actually took place unless a sample of blood for analysis was removed from the patient immediately after exposure to the gas.

In acute carbon monoxide asphyxiation, many persons who are found unconscious survive for twenty-four hours and even longer periods. They may regain consciousness only to lose it again or they may remain comatose until they die. A hypostatic bronchopneumonia may set in. At necropsy, patients surviving for more than twenty-four hours after an acute asphyxiation which has rendered them unconscious manifest a characteristic lesion, which is the most constant finding in delayed deaths from acute carbon monoxide poisoning regardless of the source of the gas. This lesion consists of a bilateral symmetrical anemic softening or necrosis of the globus pallidus, which is readily seen in the brain removed in such a case, which I have brought here today.

Much has been written about so-called chronic carbon monoxide poisoning resulting from the repeated inhalation of small amounts of carbon monoxide never sufficient to produce the clearcut picture of an acute asphyxiation. The variety of ill effects which have been attributed to the repeated inhalation of small amounts of carbon monoxide over a protracted period of time are difficult to evaluate. Carbon monoxide is not a cumulative poison in the sense of being stored in the body. It is rapidly eliminated and its deleterious action is not dependent on any specific action of the gas other than its ability to combine with and appropriate hemoglobin at the expense of its oxygen carrying capacity. Acute asphyxiation occurs because the hemoglobin in union with carbon monoxide cannot carry oxygen to the tissues. A critical analysis of those cases in which it is claimed that a specific organic lesion has resulted from exposure to small nonasphyxiating amounts of carbon monoxide, that is, amounts insufficient to have produced unconsciousness, will not reveal any instance in which some other explanation for the lesion is not just as reasonable or more likely. Too often the medical expert entertains the attractive possibility for such causal relationship, reasoning from the fact that bona fide acute carbon monoxide asphyxiation may be followed by various sequelae resulting from organic lesions which had their inception at the time the acute asphyxiation occurred. Too often, however, this same medical expert when he arrives in a court of law will testify not to the possibility of a causal relationship between the disability in question and exposure to small amounts of carbon monoxide in the past but to the reasonable certainty that such is the case. Why a causal relationship, which has only been considered possible, or at best which cannot be proved outside the law court, should suddenly acquire certainty in the mind of the expert inside the court room is something which I have never been able to understand. There is no real evidence that exposure to small amounts of carbon monoxide causes permanent damage to any particular organ in the body. The nervous system and cardiac lesions attributed to such exposure have been overestimated. For example, in a recent case the brain of a middle-aged man contained small cysts in both basal ganglions which were perfectly explicable on the basis of a cerebral arteriosclerosis. Because he had once worked in a garage, even though there had never been any history of his having been overcome by carbon monoxide, an attempt was made to relate the cysts in the basal ganglion to exposure to carbon monoxide.

DR. WALTER MODELL: Do the tables include deaths from industrial poisonings?

DR. HELPERN: Yes, all fatal poisonings are included. We do not meet with many fatal industrial poisonings in New York City.

DR. JANET TRAVELL: How long can you keep blood between the time of drawing it and the time that the determination of the carbon monoxide content is made?

DR. HELPERN: If the blood is placed in a tightly corked bottle, it can be kept for quite a while before chemical analysis is carried out. The carboxyhemoglobin does not dissociate in the bottle. Sometimes twenty-four hours or longer may elapse before the toxicologist receives the blood. Blood which cannot immediately be sent for analysis should be kept in the refrigerator.

In a dead body, carboxyhemoglobin persists for a long time and its presence may be detected even in cases of marked decomposition. Carboxyhemoglobin can be detected in embalmed bodies exhumed long after burial.

DR. TRAVELL: Do you take the blood under oil?

DR. HELPERN: It is not necessary to cover it with oil; as a matter of fact, we never do.

DR. CATTELL: The various members of the Department of Pharmacology are prepared to discuss the common forms of poisoning which Dr. Helpern has mentioned, but first perhaps it would be well if any of you have further questions to put to Dr. Helpern to have them now.

DR. GOLD: What is the percentage of carbon monoxide in the blood in most of the fatal cases as you encounter them?

DR. HELPERN: In most of the fatal cases in which the victim is found dead of carbon monoxide poisoning, from 50 to 75 per cent and sometimes more of the hemoglobin is saturated with carbon monoxide. Fatal cases have been observed in which only 30 per cent of the hemoglobin was combined. Differences in the percentage of carbon monoxide in the blood of several persons who were found dead together in the same poisonous atmosphere have been observed. Persons who die after a short period of survival away from the atmosphere of carbon monoxide or who have survived short periods of resuscitation will have lower percentages of carbon monoxide in their blood. Quantitative determination of the carbon monoxide content of the blood should be carried out with the Van Slyke manometric apparatus.

STUDENT: What is the best treatment for a case of carbon monoxide poisoning?

DR. HELPERN: I should prefer to leave that to the pharmacologists, who I believe are prepared to discuss treatment.

TREATMENT OF CARBON MONOXIDE POISONING

DR. CATTELL: I am charged with the question of the treatment of carbon monoxide poisoning, and I might say a few words at this time.

What Dr. Helpern said regarding the rate of elimination of carbon monoxide represents a fundamental observation, which points to the rational treatment in poisoning. He told us that in the course of an hour about half the carbon monoxide which is contained in the blood is eliminated. In general, the rate of elimination represents a logarithmic curve and, if the persons continues to respire, the carbon monoxide is eliminated completely from the body in the course of time.

The experiments of Haldane, made on himself, are the classic ones in this field. He found that when the

concentration of carbon monoxide reached a percentage of 0.07 in air, the oxygen being 20.9 per cent, the hemoglobin was half saturated with carbon monoxide. Thus the affinity of hemoglobin for carbon monoxide was found to be about 300 times that for oxygen, and there is formed a relatively stable combination of hemoglobin and carbon monoxide, which interferes with its function as a carrier of oxygen. I should add that more recent studies indicate a somewhat lesser affinity of hemoglobin for carbon monoxide, i. e. about 210 times that of oxygen. The reaction is subject to the laws of reversible reactions in general, and if the concentration of oxygen is increased there will be a tendency to displace the carbon monoxide, and vice versa. Clearly the first consideration in treatment is to provide an adequate supply of oxygen.

In severe poisoning, these people have a greatly depressed respiration as the result of the asphyxia of the centers, so the first procedure in treatment is to give artificial respiration. The increased respiratory exchange favors absorption of oxygen by the blood and the elimination of carbon monoxide through the lungs. This process is considerably aided if artificial respiration is carried on with a high concentration of oxygen, so 100 per cent oxygen may be administered with the aid of a mask.

In 1920 Henderson and Haggard introduced carbon dioxide as a resuscitative measure and showed its effectiveness in stimulating the respiration and in promoting the exchange of gases with the blood. There are special indications for the use of carbon dioxide in poisoning by carbon monoxide, since the respiratory exchange is likely to be inadequate, owing in part to an abnormally low carbon dioxide content in the body. There are two conditions which tend to give abnormally low carbon dioxide tensions: In the first place, during the early stages of poisoning, when the respiratory center is still active, the asphyxia stimulates respiration and carbon dioxide is lost more rapidly than usual; secondly, oxidative processes are interfered with and thus the amount of carbon dioxide formed is less than normal.

Carbon dioxide is thus indicated for the purpose of stimulating the respiration and promoting the replacement of carboxyhemoglobin with oxyhemoglobin. This, however, is not the only advantage of increasing the carbon dioxide content of the blood, for it also facilitates the release of oxygen from the hemoglobin to the tissues and at the same time favors the separation of carbon monoxide from its combination with hemoglobin.

In the matter of drug therapy I need say very little. I would like, however, to quote from a book that has just appeared by Dr. Cecil K. Drinker on the subject of carbon monoxide poisoning. When we consider the circumstances that we are dealing with, a condition which is essentially an asphyxia arising from the inability of hemoglobin to supply oxygen to the cells of the body, and the fact that apart from the asphyxia there is no deleterious action of carbon monoxide in the tensions obtaining during poisoning, it becomes apparent that we can expect very little from drug therapy.

Dr. Drinker, in introducing the subject, remarks that bystanders feel that the doctor should do something, and the thing done is usually a hypodermic injection of some drug. Then he says:

> I have records of the use of strychnine, caffeine, camphorated oil, atropine, digitalis, pituitary extract, adrenin, alpha-lobeline, methylene blue, and even morphine. The hypodermic injection of any of these drugs in carbon monoxide asphyxia is a forcible indictment of the present teaching of medical students as to the management of asphyxia; the more so, since often when one drug produces no effect, several more are administered.
>
> It is a fact that practically every possible or impossible drug has been used in carbon monoxide poisoning, and it is doubtful if any of them influences the result.

He then goes on to discuss the objections to the use of these substances, and the only one for which he sees a possible usefulness is caffeine as a respiratory stimulant, but it is clear that he doubts the efficacy of this drug as well. So much for carbon monoxide.

DR. GOLD: Would Dr. Drinker not put the patient into an oxygen tent?

DR. CATTELL: When I referred to drug therapy I had in mind treatment other than by oxygen and carbon dioxide. He favors the procedure now in general use of artificial respiration using, when available, a mixture of 7 per cent carbon dioxide and 93 per cent oxygen administered through a face mask.

STUDENT: Can you base your prognosis on the amount of carbon monoxide you find in the blood immediately after you see the patient?

DR. HELPERN: Yes, I think that is an important point to consider. If a person has inhaled a considerable amount of carbon dioxide and the blood shows a high percentage of saturation with carbon monoxide, the danger of a fatal outcome or of serious sequelae is greater than after the inhalation of smaller amounts of the gas with lower percentage concentration of the gas in the blood.

STUDENT: Are there any residual effects of disease in those cases in which recovery occurs?

DR. HELPERN: In some cases of carbon monoxide poisoning in which there has been a real asphyxiation during which the patient was unconscious, recovery may take place but with distressing residual effects, chiefly referable to the nervous system. Mental deterioration or persistent paralysis may occur. I think Dr. Hausman has probably seen such cases which followed acute carbon monoxide poisoning. However, many patients who recover do so completely without any sequelae.

DR. LOUIS F. HAUSMAN: I might mention one point. The question arises as to whether or not some forms of chronic parkinsonism may follow carbon monoxide poisoning. As stated by some authorities, some of the cases of chronic Parkinson's disease are found in chauffeurs or taxicab drivers who may be exposed to the fumes of an exhaust pipe with carbon monoxide. I should like to ask Dr. Helpern whether he thinks that is a plausible suggestion in those particular cases.

DR. HELPERN: Do more cases of Parkinson's disease occur in chauffeurs or taxi drivers than in those engaged in other occupations? I think that is a question which must first be answered. Unless it can be shown that the chauffeur had suffered a real acute asphyxiation from inhaling carbon monoxide in motor exhaust fumes, I should feel inclined not to attribute his Parkinson's disease to that cause. Considering the number of chauffeurs, taxi drivers and traffic policemen who inhale motor exhaust fumes, there should be many more cases of Parkinson's disease from this source if there was a definite relationship between the disease and exposure to small amounts of carbon monoxide.

DR. HAUSMAN: Except in the few cases we have had here, the one or two in which the blood has been examined, there seems to be an increase in the concentration of the poison in the blood stream.

DR. HELPERN: I do not think that the presence of a small amount of carbon monoxide in the blood in

such a case really indicates any more than that the patient had been exposed to carbon monoxide on that particular day. It does not prove anything as to the presence of carbon monoxide in his blood the day or a week or a year before or at such time in the past when his disease had its inception. Carbon monoxide is not stored in the body like lead or arsenic to be excreted over long periods of time. The fact that small amounts of carbon monoxide are found in a chauffeur's blood today does not imply that a chronic degenerative disease from which he is suffering was caused by exposure to carbon monoxide a long time before.

DR. CATTELL: There are several other substances that we need to consider, so perhaps we shall leave carbon monoxide poisoning and ask Dr. Gold to take up barbiturate poisoning.

BARBITURATE POISONING

DR. GOLD: A few days ago I asked a house officer whether he had seen a case of barbiturate poisoning during his residency. He replied that he had seen one case.

"What barbiturate was it?"

He said he didn't remember but that it was one of them.

"How much did the patient take?"

His answer was: "A bottleful."

"What was the course?"

"She slept a few days and recovered."

It did not seem profitable to pursue the questioning. The patient's chart shed little additional light. I cite this because it is quite typical of the character of the information that is often secured in cases of human poisoning. No wonder at all that the efficacy of a method of therapy is so difficult to evaluate.

The usual situation in the case of barbiturate poisoning which requires vigorous treatment and which offers a chance of success involves an individual in coma, with pupils that are usually contracted—only in the terminal stages does one find a dilated pupil in these cases—rapid, shallow and jerky respiration, cyanosis, usually collapsed veins, cold extremities. The pulse is generally very fast, as high as 150 a minute, and feeble. The blood pressure is low. The reflexes are absent. Sometimes there is a high fever, up to 105 or 106 F., and if there is some moisture in the throat or bronchi the case looks very much like a bronchopneumonia. Sometimes the temperature is subnormal. Depending on the severity of the poisoning, extent of exposure and kind of treatment, the case pursues one of two courses: recovery or death.

The cause of death in clinical barbiturate poisoning is complex. It involves depression of the respiratory center, the heart and the vasomotor center. All of these are depressed by the drug directly, but each also suffers indirectly from the poor function of the others. A vicious circle is therefore set up with inadequate breathing and circulation. Failure of the respiration is generally the immediate cause of a fatal issue. Primary failure of the heart is rarely, if ever, a cause of death in these cases, because the drug paralyzes the nerve centers long before so much damage is done to the heart. These facts have a bearing on our choice of procedures in treatment.

The first thing to do is to insure the fact that the patient has clear air passages, to draw the lower jaw forward and pull out the tongue if possible. Not infrequently that simple expedient will be sufficient to reverse the course of a case which may at first seem almost hopeless. The relaxed tongue against the soft palate or pharynx may seriously impair the movement of air into the lungs. This is one of the chief causes of disaster when the barbiturates are used as general anesthetics.

Then one treats the patient by the usual technics employed in the control of secondary shock. He is wrapped in warm blankets, and hot water bottles or electric pads are applied to the extremities. Intravenous infusions of 5 per cent dextrose and physiologic salt solutions are given continuously, about 2 liters a day.

Several physiologic antidotes have been used with varying success, namely strychnine, metrazol, caffeine, ephedrine and picrotoxin. I shall speak only about the one which is now occupying the center of the stage, namely picrotoxin. Koppanyi and his associates appear to have been the first to put this drug to use effectively in cases of barbiturate poisoning. It is a strong stimulant of the central nervous system, the cortical centers and the medullary centers. In large doses it causes clonic convulsions similar to those of camphor. It is soluble in water to the extent of about 0.5 per cent. One of the available preparations is a vial containing 20 cc. of a 0.3 per cent solution or 3 mg. per cubic centimeter. The usual technic is to give from 3 to 10 mg. by intravenous injection (or intramuscular injection) and repeat the dose as necessary at intervals of from one to ten minutes in the case of the intravenous route. The full effects of an intravenous injection of this drug often take about five minutes to develop. The object is to keep on repeating the dose until effects appear. What effects is one to expect? They are signs of stimulation, hyperactivity of the skeletal muscles, some myoclonic movements; the finger may flick or the hand may turn over spontaneously; the depth or rate of respiration may increase. When these signs of stimulation appear, an endeavor is made to retain them by repeated injections, and the intervals as well as the size of the repeated doses will be a matter of judgment. Do not give doses large enough or frequently enough to provoke convulsions. Do not try directly to restore consciousness. The drug will not restore consciousness rapidly in deeply narcotized individuals even in doses which cause violent convulsions. The patient regains consciousness only after many hours of treatment. The immediate object is to maintain adequate respiratory and circulatory function by the stimulant. Total doses of more than 2 Gm. of picrotoxin have been given in the long course of poisoning by the barbiturates.

If an overdose of picrotoxin is given, the resulting convulsions may be suppressed by a dose of a barbiturate.

Not all cases of barbiturate poisoning need to be treated with picrotoxin. Recovery occurs in the milder cases without it. Even in very severe cases in which the dose of barbiturate was very large, for example amytal sodium 100 grains and barbital 300 grains, survival has occurred after narcosis for three days or longer, with supportive treatment alone. The general mortality among patients who reach the hospital with barbiturate poisoning is less than 25 per cent. Up to the present time picrotoxin does not seem to have changed these figures. Clinical cases of poisoning are often complicated by the existence of disease or prolonged exposure which may lead to bronchopneumonia. However, the reported cases are not sufficiently numerous for valid statistical examination. There is sufficiently strong pharmacologic proof that the drug

is effective to justify its use for patients profoundly depressed by barbiturate poisoning.

I have not mentioned the matter of washing the stomach in barbiturate poisoning. This is a procedure one thinks of at once in all cases of poisoning by the oral route. If the depression is profound and reflexes are suppressed, I should refrain from washing the stomach. The danger of aspiration pneumonia under these conditions is greater than the good this procedure can do. In cases in which the patient is conscious or only in a state of stupor, gastric lavage may be done with water or 1 : 5,000 solution of potassium permanganate. It is well to bear in mind that not all the barbiturates are decomposed by potassium permanganate; in fact, those most commonly involved in cases of poisoning are not, namely barbital, phenobarbital and amytal.

CORROSIVE POISONING

DR. CATTELL: Dr. Travell, I wonder if we could have a few minutes' discussion of poisoning by phenol and other corrosives.

DR. TRAVELL: I will abbreviate what I was going to say. My topic will be the treatment of poisoning by phenol and its allied compounds, the cresols. The cresols, or alkyl phenols, are the chief constituents of lysol. They are less toxic than phenol itself, but the toxic actions and fate in the body are qualitatively the same.

First as to the antidotal value of ethyl alcohol in poisoning by phenols: A 10 per cent solution of alcohol is now recommended for gastric lavage by Sollmann and some textbooks on toxicology. This recommendation seems to be based on the fact that alcohol is a better solvent for phenol than are the tissue fluids; thus a dilute solution of phenol in alcohol will produce less blanching and tingling of the fingers, or less whitening of the mucous membrane, than the same concentration of phenol in water. This is seen both experimentally in animals and in human cases of poisoning in which alcohol has been taken with phenol. However, the general toxicity of phenol is increased when alcohol and phenol are given together orally. Macht has shown that if the two drugs are given simultaneously by mouth the onset of symptoms is accelerated and death may be hastened, and Simon has also shown that the concentration of free phenol in the blood from ten to thirty minutes after its administration is appreciably higher when it is given with alcohol than when it is given with water. These experiments indicate that alcohol increases the rate of absorption of phenol from the stomach. Although it is sometimes stated that alcohol is directly antagonistic to phenol after absorption, there is no satisfactory evidence that there is any such physiologic antagonism.

On the basis of the available evidence I would recommend that alcohol should not be used as an antidote for phenol taken by mouth, even in dilute solution for gastric lavage. This is all the more true since we have a better solvent for phenol, namely glycerin, which is also usually available for lavage. Glycerin as well as alcohol reduces the local irritant action of phenol but does not increase its toxicity when given at the same time by mouth. On the contrary, Macht's experiments suggest that phenols may be less toxic when given in a 10 per cent solution of glycerin.

Oils are good solvents for phenol and have also been found experimentally to reduce the minimal fatal dose of phenol, especially olive oil and cottonseed oil, and some other fixed oils. Castor oil is said to be one of the best. This does not apply to mineral oil, for the solubility of phenol in this substance is quite small, about 1 in 50 parts, and mineral oil affords no protection against a fatal dose of phenol.

In summary, the following procedures might be recommended for the treatment of poisoning by the phenols taken by mouth: As first aid measures, one should give a quantity of olive oil, cod liver oil, cottonseed oil, castor oil or whatever vegetable oil is available, and also administer egg white, because egg albumin precipitates phenol and may delay its absorption. Secondly, thorough gastric lavage with a 10 per cent solution of glycerin should be carried out and, if this is not available, lavage with water. The stomach should be lavaged even as late as an hour or two after the drug has been taken, since absorption is probably not complete within this period of time.

Unlike poisoning by the corrosive acids and caustic alkalis, it appears to be quite safe to pass a stomach tube, for I have not found any reports of perforation of the stomach in phenol poisoning. After lavage, a large dose of castor oil should be introduced into the stomach through the stomach tube. Acute symptoms of poisoning, such as circulatory shock and respiratory depression, should be treated as occasion demands. Of course, eschars on the skin should be washed with a 25 per cent solution of either alcohol or glycerin.

Just a word about the treatment of poisoning by concentrated acids and alkalis. In these instances a stomach tube should not be introduced. For chemical neutralization, weak acids or alkalis should be administered by mouth, such as vinegar, lemon juice and tartaric acid for poisoning by alkalis, and milk of magnesia and lime water as antidotes for poisoning by acids. The alkaline carbonates, which liberate carbon dioxide, should not be employed as antidotes.

POISONING WITH MERCURY AND LEAD

DR. CATTELL: There are several other important groups which we unfortunately have not yet covered, but I wonder if we could have a few minutes from Dr. Modell to deal with the metals.

DR. MODELL: Poisoning with mercury bichloride is dangerous and difficult to treat because of the rapidity with which it produces local damage and the promptness with which it is absorbed from the gastrointestinal tract and from other mucous surfaces. Irreparable damage to the kidneys and other organs follows quickly. Ten minutes after the oral administration of mercury to dogs, lesions in the kidneys have been demonstrated. In a large series of cases it was shown that the mortality rate mounted sharply when emesis or lavage was delayed for much more than fifteen minutes after the ingestion of the poison.

Mercury bichloride poisoning, therefore, should be considered an emergency and treated with as much dispatch as one would a severed artery or a case of suffocation; minutes may be of vital importance. The important thing is to empty the stomach promptly. The most readily available means should be used to induce emesis. The stomach should be washed, using water alone if an antidote is not handy.

A number of chemicals have been used with the wash water to precipitate the mercury and to delay its absorption, but there is no satisfactory proof that any of them has had an appreciable effect on the high mortality rate in mercury bichloride poisoning. Recently,

however, sodium formaldehyde sulfoxalate was introduced by Rosenthal as a chemical antidote. It is by far the most promising agent thus far suggested. It reduces the mercury bichloride to metallic mercury. Its action can be accelerated by the addition to the solution of a mild alkali such as sodium bicarbonate. Sulfoxalate can protect animals against doses of mercury bichloride which would otherwise be fatal, but its ability to save animals is not great if as long as fifteen minutes to half an hour elapses before it is given and if the doses of mercury bichloride have been very large.

A 10 per cent solution of sulfoxalate with 5 per cent of sodium bicarbonate may be used for washing the stomach. The solution should be freshly made, but time need not be wasted in making such a solution accurately since sulfoxalate is not very toxic. After washing, about 200 cc. of such a mixture may be left in the stomach. An intravenous injection of from 10 to 20 Gm. of sulfoxalate in a 10 per cent solution may also be given. The injection should be made slowly. A variety of programs for after-care have been suggested. The treatment will depend on the symptoms which develop.

I would like to say a few words about lead poisoning, because in chronic lead poisoning the treatment differs radically from that used in most other types of poisoning. Generally one tries to get rid of the poison as rapidly as possible, but in the treatment of chronic lead poisoning the elimination of lead is regulated so that it is slow, and in acute episodes an attempt is made to stop the elimination of lead entirely.

Lead is stored in the bones and while there it does essentially no harm except, possibly, for its action on the teeth. When lead is mobilized from the bones and circulates through the body in an appreciable concentration it may cause disturbances by attacking the kidneys, liver and central nervous system, or it may precipitate an attack of colic.

The lead stream parallels the calcium stream, and any measure which makes for the deposition of calcium in the bones also makes for the deposition of lead there, and, conversely, the mobilization of calcium from the bones leads to the liberation of the lead which is stored there.

The principles of treatment follow this relationship. In acute lead episodes a high calcium diet is used to bring about a deposition of lead in the skeleton and to allay symptoms. In the treatment of lead colic, the intravenous injection of 15 cc. of a 10 per cent solution of calcium chloride is often followed by a dramatic disappearance of the pain.

After the acute symptoms have subsided, the question arises whether the patient should be deleaded. The considerations which favor deleading are that lead in the bones is a potential source of acute exacerbations; that these episodes may be brought on by acute infections, metabolic disturbances, disturbances in acid-base equilibrium, low calcium diet and drugs. Furthermore, after such episodes the lead is not necessarily eliminated but may be redeposited in the bones, and the cycle may be perpetuated. Deleading must be slow and carefully controlled to avoid acute toxic effects. A low calcium diet and an acidifying agent such as phosphoric acid or ammonium chloride are the essentials of the usual regimen.

DR. CATTELL: I regret that we cannot have all those questions which we would like to ask, but the hour for adjournment has already passed.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

HOWARD A. CARTER, Secretary.

HOGAN BREVATHERM PREMIER MODEL ACCEPTABLE

Manufacturer: McIntosh Electrical Corporation, 223-233 North California Avenue, Chicago.

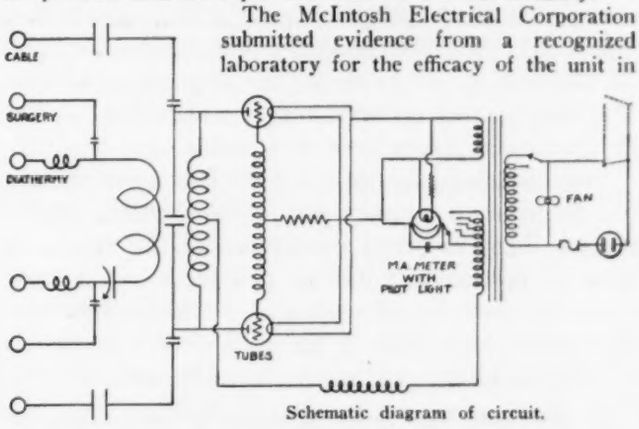
The Hogan Brevatherm Premier Model is a mobile short wave diathermy unit intended for use in medical and minor surgical diathermy. The unit investigated was designated by number 8685, while other serial numbers represent the same machine in different finishes and styles but with the same hookup and electrical characteristics. It is available with a subcabinet. Standard accessories include plate, cuff and pad electrodes and rubber bandages. Optional accessories consist of air-spaced plates and localizing disks, treatment arms, induction cable, orificial applicators and electrosurgical instruments.

Hogan Brevatherm Premier Model.

Two vacuum tubes in a tuned-plate, tuned-grid, push-pull oscillator circuit generate high frequency energy at a wavelength of about 12 meters. The patient circuit is inductively and capacitively coupled to the oscillator circuit. There is fan-cooling ventilation in the upper part. The shipping weight for upper and lower sections is 228 pounds. The overall size is 22½ inches wide, 42½ inches high and 16½ inches deep.

The output was found to be 315 watts when the lamp load method was used connected to a 110 volt line. The temperature rise in the outside windings of the transformer after two hours of operation at a full input was within the limits of safety.

The McIntosh Electrical Corporation submitted evidence from a recognized laboratory for the efficacy of the unit in producing heat deep within human tissues. Temperatures were taken initially and after twenty minutes application. Current was applied in accordance with the patient's skin tolerance for heat. In the cuff technic the spacings between the cuffs and the skin were as follows: three thicknesses of flannel, four of toweling and from three-eighths to five-eighths inch thickness of felt.



Schematic diagram of circuit.

Average Temperatures (F.) for Six Observations

Technic	Deep Muscle		Oral	
	Initial	Final	Initial	Final
Air-spaced electrode.....	99.3	105.4	98.5	*
Cuff	97.7	106.2	97.9	*
Cable	98.7	105.8	98.4	*

* Not observed.

The unit was tried out clinically by a qualified investigator, who reported it to be as effective and satisfactory as any other unit which he had tested. As no evidence was submitted for fever therapy, he did not test the machine with this technic. He advised that the Hogan Brevatherm Premier Model be accepted for air-spaced, cable and cuff technics only.

In view of the foregoing report, the Council on Physical Therapy voted to include the Hogan Brevatherm Premier Model in its list of accepted devices.

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SATURDAY, AUGUST 5, 1939

FEDERAL COURT HOLDS GOVERNMENT INDICTMENT AGAINST AMERICAN MEDICAL ASSOCIATION INVALID

Elsewhere in this issue of THE JOURNAL appears the full text of the opinion of Justice James M. Proctor in the District Court of the United States for the District of Columbia on the demurrer to the indictment against the American Medical Association. Associated with the publication of this opinion are transcripts of a number of editorials which have appeared in newspapers in the brief period that has elapsed since the decision was first announced. Also there appears a press release issued by the Department of Justice for morning papers of July 27, indicating that further action is contemplated by the Department of Justice in relation to this case.

After indicating the nature of the indictment and the five forms of conspiracy that were charged, Justice Proctor listed the chief contentions of the demurrer. It is his opinion that medical practice is not a trade within the meaning of section 3 of the Sherman act. Particularly interesting in Justice Proctor's opinion is his analysis of the indictment. Thus he said:

> The defendants have raised objections to the sufficiency of the indictment as a pleading. These go mainly to the claim that many of the allegations dealing with essential and material features of the charge are vague, indefinite and uncertain. The objections are far too numerous to deal with separately. There is merit to many of them. The indictment is afflicted with vague and uncertain statements. In some instances material facts are altogether lacking.

Moreover, he said in relation to that part of the indictment which contained the charges against those indicted:

> The inducement, as well as the charging part, setting forth the plan and purpose and acts done to effectuate the conspiracy, abound in uncertain statements. Inference, opinion and conjecture are also freely indulged. This is especially so in the inducement, much of which seems unnecessary to a statement of the charge. It is questionable whether some of it would be deemed relevant and competent in proof of the offense. Every indictment should be confined to a clear and dispassionate statement of essential fact. Thus an accused can better know the exact offense with which he is charged and will not be confused in making his defense. Ordinarily improper matter in the indictment unnecessary to support the charges will not vitiate the indictment. It will be treated as surplusage and disregarded. But I doubt if such treatment would suffice to relieve these defendants of the prejudice likely to arise by an indictment which smacks so much of a highly colored, argumentative discourse against them. It must be remembered that when a case is finally submitted to a jury for their secret deliberations the indictment goes with them.

In its press release, the Department of Justice indicates that it will seek a reversal of the decision handed down by Mr. Justice Proctor. It makes the statement that the release is issued not for the purpose of commenting on the opinion but for the reason that it is important to inform physicians generally that, until the Supreme Court has acted, the government policy toward boycotts in the medical profession is unchanged. The Department of Justice says further that it will use every effort to get a final decision from the Supreme Court at the earliest possible moment and that it may consider the possibility of calling another grand jury to consider another indictment in a different technical form. Finally the Department of Justice states that announcement of the exact steps which will be taken by the government will be made within the next ten days.

In response to this pronouncement of the Department of Justice, Mr. Seth W. Richardson, one of the attorneys representing the American Medical Association, gave the following interview:

> The warning issued by the Anti-Trust Division [of the Justice Department] to the medical profession generally, following the filing of the decision of the District Court on demurrer, was both impertinent and unnecessary.
>
> It was impertinent because, as the division should know, the government has no jurisdiction whatever over the medical profession, save in the District of Columbia, and medical men elsewhere need pay no attention to the threats of the Anti-Trust Division.
>
> The "warning" was unnecessary because the members of the medical profession did not, do not and will not violate any of the antitrust or other statutes in the pursuit of their calling.
>
> Finally, with reference to the statement of the division that the present decision is not a controlling precedent and that new grand jury proceedings may follow, it is sufficient to reply that until the present ruling is reversed counsel for the defendants believe that it stands as an effective bar to any similar abortive attempts on the part of the division to make further legal "experiments" upon the doctors in the District of Columbia.

The conclusion seems inescapable that the Department of Justice has embarked on a course of prosecution if not persecution of the medical profession in this country with a view to forcing its contentions as to what should be the nature of medical practice in the United States. Failing to obtain a consent decree, it proceeded to secure an indictment. Attorneys for the American Medical Association, obeying the mandate from its Board of Trustees, sought to obtain a quashing of the indictment by the filing of a demurrer. Now Justice Proctor has declared in no uncertain terms that the demurrer is sustained and has indicated that much of the language of the indictment is "highly colored, argumentative discourse." Not satisfied with

this decision, the Department of Justice proposes to continue to seek to undermine the confidence of the people in the medical profession. The question may well be asked as to whether or not this is justice or persecution. The members of the House of Delegates of the American Medical Association have authorized the Board of Trustees and the officers to utilize to the utmost the resources of the Association in combating this attack by the Department of Justice. The opinion of Justice Proctor lends encouragement and is an inspiration to continuous effort in behalf of a free profession. The medical profession of this country will not be coerced, threatened, abused or otherwise maltreated, and it will fight to the finish when its high traditions demand a righteous resistance.

PSYCHOSOMATIC MEDICINE

In January appeared the first issue of a new periodical to be published quarterly under the title *Psychosomatic Medicine*.[1] As new concepts develop in the activities of our day, new words are coined to indicate their character. For centuries physicians have known that it is impossible to treat the body as if separate from the mind or the mind as if distinct from the body. In more recent years renewed emphasis has been placed on this point of view. The special attention paid to the constitution of the human being in relation to his growth and development and diseases has inspired the creation of special departments in medical schools devoted to the study of constitution and heredity. The dynamic psychology of Sigmund Freud placed new emphasis on the psychologic bases of many physical disturbances. The ultimate step would seem to be the present attempt to integrate these interests in the field of medical science by a psychosomatic approach.

We are not concerned in this new phase of medicine with the metaphysical approach to illness. We are concerned rather with the attempt to study cases of diseases by the scientific method with a view to determining not only the physical disorders that exist and the physical basis for such disorders but also the extent to which the mind of man is implicated in the cause of illness, modifies disease processes and controls recovery. For example, it is already well recognized that the condition called asthma may involve, in the vast majority of instances, the sensitization of the body to protein substances, such as the pollen in plants, the proteins of foods or the dandruff from domestic animals. But it is also recognized that the symptoms and their onset may be closely related to the extent to which the specific physiologic factors act in the presence of specific physical or physiologic states to produce a disturbance of function. For the condition called essential hypertension, which involves a persistent unexplained rise in the blood pressure, there are innumerable theories as to the mechanism of its production. The evidence established by Goldblatt related to the circulation of the kidney is significant. Important also, however, is the well established evidence of the effect of the emotions on the blood pressure in an individual, in whom both physical and mental factors play a part in producing a rise. This complex is surely a suitable subject for the study which such a patient may have, either by a single physician who is aware of both the physical and the mental approach or by a group of physicians who make individual observations and correlate the results. Thus psychosomatic medicine is not a revolutionary departure from well established laboratory medicine or from psychology. It brings instead to the study of disease an attack in which it is specifically recognized that every human being is a whole individual and not a loose combination of physical and psychic factors. The new method also takes into account the necessary study of the anatomy, physiology and pathology of the nervous system in relation to the mechanisms behind the development of symptoms. Psychosomatic medicine, indeed, attempts to bring about a complete combination of art and science in the practice of medicine, through a systematic technic.

The first two issues of the new publication *Psychosomatic Medicine* emphasizes this technic as applied to hypertension and to asthma in individual cases. There are also reports of basic studies on animals. A distinguished list of editors responsible for various departments in the field gives promise of selection of a high quality of material from the new reports which may soon become available in this field.

THE SUPPORT OF A FAILING CIRCULATION

Many a surgeon has watched a patient sinking into traumatic shock and realized that all that he could do by infusion of saline solution, transfusion of blood, use of epinephrine, lifting the foot of the bed and other measures still left the failing circulation inadequately supported. Many a physician has observed a patient exhausted by illness sinking in essentially the same manner. Some element in the mechanics of the circulation has remained inadequately defined and therefore beyond therapeutic control.

Forty years ago the progressive weakening of the pulse and of the sounds of the heart in these conditions was interpreted as a progressive failure of the force of the heart. Then, as the conception of the nervous control of arterial pressure was developed by physiologists, as the sphygmomanometer was introduced into clinical medicine and as the failure of the circulation was found to be expressed always in a progressive fall of arterial pressure, the underlying cause was inferred

1. Psychosomatic Medicine **1**: 1-200 (Jan.), 201-332 (April) 1939, published quarterly with the sponsorship of the Committee on Neurotic Behavior, Division of National Research Council, 2101 Constitution Avenue, Washington, D. C., annual subscription $5.

to lie in failure of the vasomotor nervous system.[1] Yet, as Porter [2] and Henderson [3] early pointed out, this explanation left much still to be explained. Henderson even ventured to assert that the failure, both of the heart action and of arterial pressure, is secondary to failure of what he called the "venopressor mechanism." Gradually it has come to be almost universally accepted by physiologists, who based their decision on the accumulated evidence, that the underlying cause of a failing circulation is a progressively diminishing venous return.[4] The heart can pump into the arterial system only what it receives from the venous system; no degree of vasomotor activity can maintain arterial pressure if the output of the heart falls too low. Evidently the fundamental condition is the stagnation of blood in the body tissues. But why does such stagnation occur after severe physical injury and suffering, after major surgical operations and as a terminal event in illness?

Turning this question backward, Henderson and his collaborators [5] posed the question: May it be that the tonus of the musculature of the body, both skeletal and visceral, produces and maintains throughout the body a gentle pressure that normally plays a major part in sending the blood from the tissue capillaries into the veins and on back to the heart? And may it not be that in states of physical depression this tonic intratissue pressure is also depressed and with it the venous return? For this conception evidence is now rapidly accumulating, both experimental and clinical. Schuberth [6] has found that some such explanation is probable in those cases in which a shocklike condition appears under spinal anesthesia. Now Ornstein, Licht and Herman [7] report a method of raising venous pressure to be used in surgical and traumatic shock, particularly applicable to failure of the circulation under spinal anesthesia.

The technic involves the application of wide electrodes of toweling soaked in physiologic solution of sodium chloride round the lower part of the abdomen and the lower lumbar and gluteus muscles with a belt of block tin outside the toweling. Each leg is encased in similar electrodes. These electrodes are then connected to an inductorium and a gentle, quite easily bearable faradic current is turned on. The result in normal persons is always a distinct increase of venous pressure. Although the cases of serious circulatory depression in which the treatment has been applied are as yet few, the effects are so definite as to justify the hope that this therapy may at least solve the problem of failure of the circulation under spinal anesthesia.

Evidence from other sources indicates that the most effective means to combat failure of respiration under spinal anesthesia is intratrachael insufflation.

1. Crile, G. W.: An Experimental Research into Surgical Shock, Philadelphia, J. B. Lippincott Company, 1899. Romberg, Ernst, and Pässler, H.: Deutsches Arch. f. klin. Med. **64**: 652, 1899.
2. Porter, W. T.: Am. J. Physiol. **27**: 282, 1910; **71**: 277 (Jan.) 1925.
3. Henderson, Yandell: Am. J. Physiol. **27**: 152, 1910. Henderson, Yandell, and Harvey, S. C., ibid. **46**: 533 (Aug.) 1918.
4. Gollwitzer-Meier, K., and forty-two other contributors: Der Kreislaufkollaps, Verhandl. d. deutsch. Gesellsch. f. Kreislaufforsch., 1938, p. 15.
5. Henderson, Yandell; Oughterson, A. W.; Greenberg, L. A., and Searle, C. P.: Am. J. Physiol. **114**: 261 (Jan.) 1936. Henderson, Yandell: Adventures in Respiration, Baltimore, Williams & Wilkins Company, 1938.
6. Schuberth, O. O.: Acta chir. Skandinav. (supp. 43) **78**: 1, 1936.
7. Ornstein, G. G.; Licht, Sidney, and Herman, Myron: Quart. Bull. Sea View Hosp. **4**: 333 (April) 1939.

Current Comment

APPLICATION OF AN ENZYMIC REACTION IN CHEMICAL METHODS FOR THE DETERMINATION OF VITAMIN B_1

The development of chemical methods for the determination of vitamins is of practical importance since such methods make assays easily possible. The assay by chemical means of vitamin B_1 is complicated; this factor exists in many biologic materials both as thiamin and as cocarboxylase, the pyrophosphate of thiamin. Indeed it has been found that thiamin pyrophosphate is the predominant form of vitamin B_1 in many yeasts and animal tissues. When applied directly to such materials, chemical methods depending on the reaction between thiamin and diazotized *p*-aminoacetophenone or on the formation of thiochrome from thiamin yield values decidedly lower than those obtained by biologic assay. The method involving the use of *p*-aminoacetophenone is specific for thiamin and does not permit the determination of the vitamin in the phosphorylated form. Similarly it has been reported that the thiochrome formed from thiamin pyrophosphate, unlike that from unesterified thiamin, cannot be extracted by butyl alcohol and hence cannot be estimated. In recent modifications of chemical procedures for the estimation of vitamin B_1 in materials containing thiamin pyrophosphate the cocarboxylase is first converted enzymatically to thiamin, in which form it can be readily determined. Thus in a method recently described by Melnick and Field [1] advantage is taken of the fact that an aqueous extraction of yeast powder at room temperature yields solutions which will completely hydrolyze added phosphorylated thiamin. Incubation of active yeast powder with vitamin B_1 concentrates, such as rice polishings and wheat germ, converts all the phosphorylated vitamin present into unesterified thiamin, after which it may be determined accurately by measurement of the color developed on addition of diazotized *p*-aminoacetophenone. The concentration of the vitamin in the phosphorylated form can be estimated by difference between the thiamin values obtained before and after this hydrolysis. Likewise Hennessy and Cerecedo [2] found that the vitamin B_1 content of materials containing cocarboxylase could be determined by a modified thiochrome method if the cocarboxylase present was converted to thiamin by an enzyme preparation prior to the assay. The results obtained by the thiochrome method after this treatment were generally found to be in good agreement with the values obtained by bio-assay.

1. Melnick, Daniel, and Field, Henry, Jr.: Quantitative Enzymic Conversion of Cocarboxylase (Vitamin B_1-Pyrophosphate) to Free Thiamin, Proc. Soc. Exper. Biol. & Med. **39**: 317 (Nov.) 1938; J. Biol. Chem. **127**: 531 (Feb.) 1939.
2. Hennessy, D. J., and Cerecedo, L. R.: The Determination of Free and Phosphorylated Thiamin by a Modified Thiochrome Assay, J. Am. Chem. Soc. **61**: 179 (Jan.) 1939.

ORGANIZATION SECTION

OPINION OF JUSTICE JAMES M. PROCTOR IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF COLUMBIA, JULY 26, 1939, ON THE DEMURRER TO THE INDICTMENT AGAINST THE AMERICAN MEDICAL ASSOCIATION

The indictment charges a conspiracy to restrain trade in the District of Columbia in violation of section 3 of the Sherman Anti-Trust Act. The defendants are American Medical Association, a national organization of physicians; two of its subordinate bodies, the Medical Society of the District of Columbia and Harris County Medical Society of Houston, Texas, also the Washington Academy of Surgery, not fully identified, and twenty-one individual doctors all members of the national body, some officers thereof, other members and officers of the Medical Society of the District of Columbia. All defendants have demurred to the indictment. It is very long, and only abbreviated references will be made to such parts as are deemed necessary to this decision.

Group Health Association, Inc. (hereinafter called association), is alleged to be an association of government employees, engaged "in the business of arranging for the provision of medical care and hospitalization to its members and their dependents on a risk-sharing prepayment basis." Medical care is provided by a staff of salaried practitioners engaged in group practice under a medical director. A clinic is maintained, and limited hospital expenses are defrayed for the members and their dependents.

The defendants are alleged to have conspired (1) to restrain the association in its business of arranging for the provision of medical care and hospitalization to its members and their dependents, (2) to restrain such members in obtaining, by cooperative efforts, adequate medical care for themselves and their dependents from doctors engaged in group medical practice, (3) to restrain doctors serving on the medical staff of the association in pursuit of their callings, (4) to restrain other doctors in the District of Columbia, including some of the individual defendants, in pursuit of their callings and (5) to restrain Washington hospitals in the operation of their businesses.

The demurrers raise basic objections to the indictment. Of first importance is the contention that none of the alleged restraints has reference to a trade; that section 3 comprehends only those occupations in commercial life carried on in the marts of trade activity; therefore, that the medical profession and the business of the association and hospitals do not constitute "trade" within the purview of the statute. Against this contention, the government's position is that all who are occupied in any activity whereby they supply money's worth for full money payment are engaged in trade; that section 3 does cover all such activities; therefore that the practice of medicine and the businesses of the association and hospitals do fall within the scope of the statute.

Is medical practice a trade within the meaning of section 3 of the Sherman Act? In my opinion it is not. I think the matter is settled by the Supreme Court in the case of *Atlantic Cleaners & Dyers* v. *United States,* 286 U. S. 427. That case squarely presented the question whether "trade" is used in a narrow sense, as importing "only traffic in the buying, selling or exchanging of commodities," or in a broader sense. It fairly called for a definition of the word. This the court undertook to give. In so doing, it declared that the word "trade" was used in section 3 of the Sherman Act in the general sense attributed to it by Justice Story in the case of the *Schooner Nymph,* 1 Summ. 516; 18 Fed. Cases 506, No. 10,388. The court, intending to give a full and broad meaning, adopted for its own definition for "trade" the language of Justice Story in that early case, quoting therefrom as follows:

"The argument for the claimant insists that 'trade' is here used in its most restrictive sense and as equivalent to traffic in goods, or buying and selling in commerce or exchange. But I am clearly of opinion that such is not the true sense of the word, as used in the thirty-second section. In the first place, the word 'trade' is often and, indeed, generally used in a broader sense as equivalent to occupation, employment or business, whether manual or mercantile. Wherever any occupation, employment or business is carried on for the purpose of profit, or gain, or a livelihood, not in the liberal arts or in the learned professions, it is constantly called a trade. Thus, we constantly speak of the art, mystery or trade of a housewright, a shipwright, a tailor, a blacksmith and a shoemaker, though some of these may be and sometimes are, carried on without buying or selling goods."

PROFESSION EXPRESSLY EXCEPTED

Thus we have this recent controlling decision defining the word trade and expressly excepting the learned professions of which admittedly the practice of medicine is one. The decision is in harmony with others rendered before and after the *Cleaners and Dyers case.* See *Fed. Trade Comm.* v. *Raladam,* 283 U. S. 643; *Graves* v. *Minnesota,* 272 U. S. 400 and *Semler* v. *Board,* 294 U. S. 608. The restraints alleged against the doctors in specifications three and four of the charge are clearly not within the purview of the statute. I cannot accept the refinements of thought whereby it is argued for the government that the Court in quoting Justice Story was not defining "trade" but merely illustrating the narrow and broad concepts of the word. Nor does the decision lend any support to the idea that by enacting section 3 Congress intended to exercise all its plenary power over the District of Columbia to prohibit restraints against all business activities of the citizen. The Court has simply said that Congress meant to deal effectively with the evils resulting from contracts, combinations and conspiracies in restraint of trade—not all restraints upon every business pursuit, but only those affecting trade.

Doubtless, in the fulness of its power over the District, Congress could have prohibited restraints upon all occupations of the citizen. But there is nothing in the history of the legislation to suggest the need for such a broad reach of power and clearly it was not intended.

The government has cited many English and American cases dealing with restrictive convenants ancillary to agreements by doctors concerning the sale or conduct of their practice, in which the courts have applied the common law doctrine as to "contracts in restraint of trade." It is argued that these cases have, in a legal sense, drawn medical practice within the orbit of trade, giving to the word a common law meaning to include the professions. From this, it is further argued that at common law restraints upon the practice of medicine were "restraints of trade" and that Congress in the Sherman Act used the term in such a sense. But those cases are beside the point.

They do not involve any question as to whether medicine is a trade. They accept the universal understanding of it as a profession. Nor do they define "trade." They merely apply a rule of law. At most, such cases serve only to illustrate the development of a legal doctrine, having its origin in contracts concerning tradesmen, which became known as the doctrine "against restraint of trade," and which in course of time was extended and applied to agreements by doctors respecting their professional practice.

MUST FIND STATUTE SANCTION

The case of *Pratt* v. *Medical Association,* 1 K. B. 244, upon which the prosecution places much reliance, is interesting in the similarity of facts there proven and here alleged; yet the legal aspects differ greatly. The suit was a civil action in tort by the plaintiff doctors to recover damages for malicious injury to their means of livelihood. The claim was grounded upon common-law principles which hold every man liable in damages for wrongful injury to another's means of livelihood.

Combination was not the gist of the action; that circumstance only increased the damage. So here, if the livelihood of group practitioners has been injured by the wrongful acts of the defendants, they too have redress in a civil court. But the charge in the present case is criminal, and to stand must find its sanction solely in the statute.

Coming now to other specifications of the charge, one, two and five. Is the association, or are its members or the hospitals, engaged in trade within the meaning of section 3 of the statute? The association is alleged to be a nonprofit cooperative

association of government employees engaged in the business of arranging for the provision of medical care and hospitalization to its members and their dependents.

The plan and purpose, it is charged, was to hinder and obstruct the association in procuring and retaining on its staff qualified doctors; to hinder and obstruct its doctors from the privilege of consulting with others and using the facilities of the Washington hospitals, and to hinder and obstruct the association in obtaining access to hospital facilities for its members and its doctors from treating and operating upon their patients in the hospitals. The foregoing references to the Washington hospitals in the plan set forth forms the only support for the fifth specification, charging a purpose to restrain the business of operating said hospitals.

ADOPTED STORY DEFINITION

In previous discussion of the *Cleaners and Dyers' case* I have expressed the view that the Court in giving to the word "trade" its full meaning adopted the definition of Justice Story as its own. That definition covers both the narrow and broad understanding of the term. Its most restricted sense comprehended "traffic in goods or buying and selling in commerce or exchange." Manifestly, neither the association, its members or the hospitals are engaged in that sort of trade.

Nor do they, in my opinion, come within the broader class of manual or mercantile pursuits carried on for profit or gain without buying or selling goods. The business of the association was not of a manual or mercantile nature. It was a nonprofit cooperative institution whose corporate object was to render service in providing medical and hospital care for its members. The argument for the government that the business of the cleaners and dyers involved merely the sale of service, and yet was held to be a trade, overlooks the fact that the very essence of that service was the skilful use of labor and material, quite equal to the "art, mystery or trade" of a tailor, blacksmith or shoemaker, mentioned by Justice Story in illustration of manual and mercantile pursuits falling within the category of trade.

Other federal and state decisions bear out the conception of trade as an occupation or pursuit of a mercantile character. See *Semler* v. *Board*, 294 U. S. 608; *Toxaway Hotel Co.* v. *Smathers & Co.*, 216 U. S. 439; *U. S. Hotel Co.* v. *Niles*, 134 Federal 235; *Harms* v. *Cohen*, 279 Federal 276 (as to musical composers); *People* v. *Klaw*, 106 N. Y. S. 341 (as to the theater); *Metropolitan Co.* v. *Hammerstein*, 147 N. Y. S. 532 (as to grand opera); *Werch* v. *Co.*, 171 S. E. 255 (as to the insurance business); *Whitcomb* v. *Reid*, 31 Miss. 569 (as to dentistry), and *State* v. *McClellan*, 31 A. L. R. 527 (as to the laundry business).

POSITION HELD EXTREME

The thesis of government counsel taken from the opinion in *Brighton College* v. *Marriott*, 1 K. B. 312, 316, that "trade" embraces all who habitually supply "money's worth for full money payment" and their contention that the statute should be so broadly construed represents an extreme position which does violence to the common understanding of "trade," rejects authoritative decisions of our courts and ignores cardinal rules of statutory construction.

Their proposition encompasses all gainful work of the citizen. Can it be supposed if Congress had any such drastic intention it would not have made the purpose clear? Certainly it is not for the courts to stretch an old statute to fit new uses for which it was never intended. *United States* v. *Gradwell*, 243 U. S. 476, 488. That would be nothing short of "judicial legislation." The charge that members of the association were restrained (specification 2) is devoid of legal substance. Their efforts to obtain group medical care is expressed through the medium of the association, a corporate entity distinct from the individual members. Upon no theory can they be treated as engaged in the business of the corporation.

Finally, when the indictment is carefully studied in all its parts, each in relation to the others, it is difficult to escape the conclusion that in its substantial realities the scheme set forth directly centered upon various forms of restraint to be exerted against physicians in rendering treatment and care to their patients, and that all else is incidental to that design. If restraint upon doctors was the only real direct and immediate effect, any indirect effects upon the association or hospitals would not suffice to support the charges as to them. *Standard Oil Co.* v. *United States*, 283 U. S. 163, 179; *Nash* v. *United States*, 229 U. S. 373.

SUFFICIENCY OBJECTIONS

The defendants have raised objections to the sufficiency of the indictment as a pleading. These go mainly to the claim that many of the allegations dealing with essential and material features of the charge are vague, indefinite and uncertain. The objections are far too numerous to deal with separately. There is merit to many of them. The indictment is afflicted with vague and uncertain statements. In some instances material facts are altogether lacking. An important instance concerns the charge that one purpose of the conspiracy was to restrain the business of the Washington hospitals.

The indictment is barren of any statement of the business methods used by a single hospital in the letting of its facilities and service to patients. This is fatal to that particular specification, for without such facts it cannot be known whether loss of patients through operation of the scheme would injuriously affect the economic welfare of any hospital.

Moreover, the particular plan and purpose of the conspiracy as respects the hospitals is only inferentially stated in that part which deals with the plan and purpose of the scheme as against the association and its doctors. Such a method of stating the material part of the charge does not meet the fundamental requirement that a criminal accusation be stated fully, clearly and with directness and certainty. *United States* v. *Hess*, 124 U. S. 483; *United States* v. *Geare*, 54 App., D. C. 30; *McMullen* v. *United States*, 68 App., D. C. 302.

INDIVIDUAL CHARGES QUESTIONED

A question also arises as to whether the charge is laid against the individual doctors named in the caption. This is due to the pleader's statement that they "will be referred to hereinafter as the individual defendants," whereas thereafter the charge itself is laid only against "the defendants," who the caption indicates include only the several medical societies. It does seem that as to such simple, yet all-important matters, an indictment should be so drafted as to exclude any question whatever.

The inducement, as well as the charging part, setting forth the plan and purpose and acts done to effectuate the conspiracy, abound in uncertain statements. Inference, opinion and conjecture are also freely indulged. This is especially so in the inducement, much of which seems unnecessary to a statement of the charge. It is questionable whether some of it would be deemed relevant or competent in proof of the offense. Every indictment should be confined to a clear and dispassionate statement of essential fact. Thus, an accused can better know the exact offense with which he is charged and will not be confused in making his defense. Ordinarily improper matter in the inducement unnecessary to support the charges will not vitiate an indictment. It will be treated as surplusage and disregarded. But I doubt if such treatment would suffice to relieve these defendants of the prejudice likely to arise by an indictment which smacks so much of a highly colored, argumentative discourse against them. It must be remembered that when a case is finally submitted to a jury for their secret deliberations the indictment goes with them.

ILLEGAL OPERATION CONTENTION

The contention is made that the association is operating illegally in the fields of medicine and insurance; that as its activities are unlawful they do not come under the protection of the statute against restraints of trade. The indictment describes the association as a nonprofit, cooperative society, organized under the laws of the District of Columbia, engaged in the business of arranging for the provision of medical care and hospitalization to its members and their dependents on a risk-sharing prepayment basis. This is enough to indicate that it was organized under those sections of the general corporation laws providing for incorporation of societies for benevolent, charitable, educational, literary, musical, scientific or missionary purposes, including societies formed for mutual improvement or promotion of the arts. Thus, the view is strengthened that the association was not engaged in trade, for such corporate functions clearly would not fall under that category. However, I do not think it can be said from the bare allegations of the indictment, taken in their entirety, that the association is engaged in medical practice or insurance. Whether or not that is so could better be decided upon the evidence if in a trial it should be deemed pertinent to inquire into the question.

Finally, section 3 of the Sherman Act upon which the indictment is founded has been attacked by defendants as unconstitutional. It is argued that the statute is too vague and uncertain to fix a definite standard of guilt or inform one accused of violating it of the nature and cause of the accusation. I do not agree with the argument. If I did, the circumstances would not justify me declaring the statute invalid, for that would be unnecessary, hence inappropriate, in view of my holding that the indictment is bad on other grounds.

The several demurrers to the indictment are sustained. Judgment will be entered accordingly.

DEPARTMENT OF JUSTICE REPLIES

Press Release from the Department of Justice Commenting on Justice Proctor's Opinion

The Department of Justice will seek to reverse the decision handed down by Mr. Justice Proctor in the suit against the American Medical Association and others pending in the District of Columbia. This decision declares the indictment invalid on two grounds: First, that because of a restricted definition of the word "trade" in the Sherman Act, physicians are entitled to conspire with and boycott hospitals in order to exclude other members of their profession from the pursuit of their calling. Second, because the indictment does not inform the defendants of the crime with which they are charged.

The department makes this statement not for the purpose of criticizing the opinion but for the reason that it is important to inform physicians generally that, until the Supreme Court has acted, the government's prosecution policy toward boycotts in the medical profession is unchanged. None of the reasoning of the opinion persuades the department that doctors are free to engage in practices which would be illegal if they belonged to some other calling. In addition, any further restraints of the character included in the indictment will also be subject to prosecution. It is important that physicians not be misled on this point for the reason that the District Court opinion is not a binding authority on other judges.

The department, recognizing the seriousness of the present uncertain situation, will use every effort to get a final decision from the Supreme Court at the earliest possible moment.

The second ground for declaring the indictment invalid is that the defendants were not sufficiently informed of their offense. The department, without any criticism of the opinion, feels that the defendants were fully informed by the indictment of the nature of the offense and were at no time in the dark as to the character of the charges made against them. It will therefore seek an appeal on this count also.

The fact that the decision partly rests on this second ground complicates the appeal. In most antitrust proceedings it is possible for the government to appeal directly to the Supreme Court and thus obtain a more speedy final decision. Under the present circumstances, such a direct appeal is at least doubtful and the government may be forced to go first to an intermediate appellate court. It may be that, because of the delay occasioned by the doubt as to a direct appeal to the Supreme Court, time will be saved if a new grand jury is called to consider another indictment in a different technical form. However, even if this is done, an appeal will be presented at the same time. These technicalities, which in no way affect the merits of the case, must be carefully investigated. Therefore an announcement of the exact steps which will be taken by the government will be made within the next ten days.

PRESS COMMENT ON JUSTICE PROCTOR'S OPINION

OUR DOCTORS GO FREE

The Dayton (Ohio) *Herald*
July 27, 1939

In ruling that the American Medical Association has not violated and could not violate the Sherman Anti-Trust Act, the federal court of the District of Columbia has tossed out of court the most fantastic suit ever instituted by any government against its own people.

If the New Dealers in the so-called justice department ever studied American history, they should have remembered that famous phrase spoken in defense of American liberties by their great English champion, Edmund Burke: "I do not know the method of drawing up an indictment against a whole people." And if they remembered, they should have known that there is no law under which an honored profession can be indicted before a whole people.

This shocking insult to a free people by its own government, like many other ill conceived reforms, may have been rooted in good intentions. There is reason to believe that the practice of medicine should be changed in some respects to serve better the changing needs of the nation. There are too many people ill attended in sickness, just as there are too many people ill fed, ill clothed and ill housed. There is room for improvement in the practice of medicine as in every other field in this imperfect world.

But good intentions never excuse inexcusable tactics. If charges should be made, there are ways in which they should be made. Going at an entire profession with an upraised club and haling its members into court as lawbreakers is not one of them. Anyway, these smart young lawyers could have better started with another profession.

Who are these men charged with violating the laws of the land to be prosecuted by the people? They are, the vast majority of them, men who have dedicated their lives to the service of humanity. They have watched over the bedside of all of us, patted the breath of life into our bodies and will ease the pain when breath departs. They have sat beside us in the long night hours, and eyes opening from a fitful sleep have closed again in confidence because the doctor was there and would stay there as long as he was needed. They have seen to it that we got the medicines we needed, even when some of us could not pay for them. They have, in whatsoever house they entered, gone for the benefit of the sick and refrained from all wrongdoing and corruption.

These are the men who were haled into court, these men who have been healing the sick through the ages and making this a better world—haled into court by young upstarts who think they are going to make this a perfect world overnight. And the people who trust their doctors as they trust no one else are not going to forget or forgive. The suit was not only indefensible on ethical, moral and legal grounds; it was the worst sort of politics.

To be sure, there are doctors, just as there are lawyers, who violate the ethics of their profession, who are more interested in fees than in healing, who abuse their high calling. Most of us know a few of them and despise them. But lump them all together and weigh them in the scales against that doctor—a friendly, fun-loving old man, a kindly, serious-minded young man—who was not thinking of his fee when he gave of his time and his skill and his compassion in our hour of suffering, and he covers up a multitude of sins.

Dragging such men into court is high-handed and ridiculous.

NOT A TRADE

New York *Herald Tribune*
July 28, 1939

Judge Proctor's basic point in his decision for the American Medical Association and allied defendants in the antitrust action against them—namely, that the practice of medicine is not a trade in the meaning of the Sherman law—seems to us thoroughly sound both as law and as social policy. If the medical profession is not a learned profession then there is no such animal, and if our statutes aimed at the restraint of trade are not to discriminate between trade and the learned professions, then the attempts of the latter to create standards of admission and service must sooner or later go by the board.

On the other hand, this does not mean that a professional association is always right or just either in its interpretation of its code or in the measures of enforcement it takes. Judge Proctor's decision does not settle the question whether the defendants acted in a high-handed and indefensible manner toward the physicians in Washington engaged in group practice for the benefit of federal employees. An association, it will be remembered, was formed among employees of the Home Owners Loan Corporation to cooperate in providing medical care for its members and their dependents, engaging doctors for the purpose on a prepayment basis. The government contends that, prompted by officers of the American Medi-

cal Association, the local medical bodies instituted an active boycott against the experiment; that hospitals were closed to the cooperative's staff, that members of this staff who were also members of the local medical societies were either expelled or forced to resign their salaried positions on the staff; that specialists were forbidden to consult with those who remained, and so on. To all of which the defendants replied in substance that whatever discipline had been adopted was in pursuance of their right and duty to maintain the standards and ethics of the profession. Aware of the highly conservative tendencies of the A. M. A. and its local affiliates, and particularly of their traditional opposition to "socialized" medicine, the public would like to know whether the government's charges are true, and, if so, whether the acts complained of had real justification as a means of preventing malpractice or were provoked by prejudice.

We thoroughly agree with Judge Proctor that a criminal suit under the antitrust laws is not a proper method of bringing this out. He has suggested civil action by the aggrieved parties. Meanwhile, it should occur to the A. M. A. and its host of friends and sympathizers that even the appearance of a boycott in defense of political and social theories is something which in this country should be avoided like the plague.

BOOMERANG INDICTMENT

The Washington (D. C.) *Post*
July 27, 1939

The government's indictment of the American Medical Association and ancillary bodies has been turned into an indictment of the Department of Justice. Seldom has that law-enforcement agency suffered a sharper rebuke than that administered by Justice Proctor in District Court yesterday.

The rebuke is not softened by the general restraint of the court's comment on a silly suit, which Assistant Attorney General Thurman Arnold was most ill advised to initiate. Now, in the face of Justice Proctor's lucid and closely reasoned opinion, the Department of Justice is in an unenviable quandary. It must either admit that its indictment of the American Medical Association as a combination in restraint of trade was a blunder or it must take an appeal from a judgment which seems to leave very few footholds for effective criticism.

Such an appeal, if lost, would only further humiliate the administration and, win or lose, it would continue to exacerbate an issue which can only be solved by friendly cooperation. The A. M. A. and many of its subordinate bodies are now showing an unmistakable tendency to further, rather than impede, well managed group health projects. The Department of Justice will turn bad into worse if it stubbornly insists on pressing an indictment bound to arouse the strongest professional antagonism.

That indictment was characterized by Justice Proctor yesterday as a "highly colored, argumentative discourse." It was found by him to indulge freely in "inference, opinion and conjecture." The justice regarded it as "afflicted with vague and uncertain statements." The indictment, finally, was found lacking in "the fundamental requirement that a criminal accusation be stated fully, clearly and with directness and certainty."

These are biting criticisms of the government's case, entirely aside from the common-sense opinion, amply backed by legal precedent, that the practice of medicine cannot properly be defined as a "trade" in the sense intended by the antitrust laws. And while the criticisms are important for the case in point they are even more so as a demonstration of one of the cardinal and most vital principles of this democracy—the subordination of the government, just as much as that of the individual citizen, to the even-handed processes of law.

Justice Proctor's opinion yesterday will not be assessed at its true value unless its criticism of an obviously punitive action against the medical profession is emphasized. Unquestionably members of that profession have their shortcomings. Undoubtedly the attitude of some of them toward group health movements has been reactionary and socially injurious. But those mistakes are no excuse for an arbitrary attempt to dragoon organized medicine into lowering its cherished standards. To dictate in that manner, as Justice Proctor has ably indicated, the government must have a far better case than it was able to present.

BLOW TO REGIMENTATION

Ohio State Journal
July 27, 1939

New Deal efforts to regiment the medical profession sustained a crushing defeat in the decision of the federal district court at Washington, holding that the Sherman Anti-Trust Act could not apply to the practice of medicine. It was a decision that most people had felt was a foregone conclusion because it seemed a mistake in the first place to regard a learned, scientific profession as a trade.

The idea of prosecuting the profession, through suit against the American Medical Association, was born in the brain of Solicitor General Robert H. Jackson, who has shown on many occasions that he favors a form of government which, if not exactly totalitarian, certainly leans toward it to the extent that it would regiment important phases of our society. The suit was a silly idea in keeping with much that has come from the brain trust, but at no time was public opinion with the prosecution.

Rebuttal to the government claim that the medical association acted in restraint of trade was clear and to the point, when the A. M. A. spokesman averred that the organization had never opposed in policy or principle a well considered expanded program of medical service, when the need could be established. The meat of the whole question was in that rejoinder, for certainly the government could establish no need for the regimentation it demanded.

The verdict is a victory of the first magnitude, not only for the medical profession, but for the people as a whole, because it is a direct and smashing refusal of the courts to sustain regimentation in the U. S. A.

GOVERNMENT AND THE DOCTORS

The Chicago (Ill.) *Daily News*
July 31, 1939

The Federal Court of the District of Columbia dismissed the government's antitrust suit against the American Medical Association and allied medical bodies. If the government now insists upon taking its grievance against the doctors to a higher tribunal, then the government is what Mr. Beadle said the law was. Court proceedings ought never to have been instituted to determine, after months of hearings, something that should instantly have been arrived at by the application of elementary horse sense upon the part of the prosecution. It was a fantastic waste of the court's time and the taxpayers' money.

The court finds that doctors are not tradesmen, as that term is defined by the Sherman Act. Of course they are not. Every one with a grain of sense knows it. Every one knows that the framers of the Sherman law hadn't the slightest notion of including professional men within the scope of the act. Nearly every one knows also that our American medical men not only are among the world's most highly skilled, but among the most conscientious and tireless doers of good and disbursers of charitable service in this country. To charge such men with comprising a selfish trust, for the purpose of forestalling medical aid from those who need it, and enabling themselves to wax fat at the expense of the public, was utter, malicious tosh.

This is not to say that the doctors, or their associations, are perfectly free from error. It is not to say that government should not do all in its power to make medical and hospital care more readily available to people who now find them difficult to obtain. But government, in striving toward this admirable aim, will get nowhere by fighting and harrassing the doctors. It must, rather, cooperate with them and seek their indispensable advice and aid.

The trust-busters, meanwhile, will do themselves, the doctors and the country a good turn by dropping this sorry matter right where it now stands. There are plenty of real trusts in America, plenty of actual enemies of our economic welfare, and plenty of demonstrable restraints upon the free flow of commerce that require the unsparing attention of these crusaders. Let them, therefore, get up against the real evils and stop wasting their energies and manpower—they are forever crabbing, by the way, about their shortage of personnel—on windmills.

A GRATIFYING DECISION—THE MEDICAL PROFESSION IS UPHELD

Columbus (Ohio) *Dispatch*
July 27, 1939

Although the government probably will appeal to higher courts, the decision of a federal district court at Washington yesterday that the practice of medicine is not limited by the Sherman Anti-Trust Law constitutes a valuable precedent and one which should weigh heavily in favor of this construction of the statutes when the case reaches a higher tribunal.

The department of justice had sought an indictment of the American Medical association and individual defendants, charging them with "restraint of trade" in opposing the activities of a cooperative health association in the District of Columbia. The ruling is to the effect that the practice of medicine is a learned profession, above and beyond the status of a commercial business or trade.

The decision does not necessarily mean that the work of group medicine organizations or cooperative enterprises, whereby members contract for medical service for an annual fee per person, is to be halted, nor that there is not a legitimate place for this sort of service for those who wish to take advantage of it. But it does mean that a bold attempt by the Roosevelt administration to summarily squelch opposition to a form of socialized medicine has been halted by the courts, which have so often during the nearly seven years of the New Deal rule proved to be the final barrier in defense of the people's rights and liberties. Carried to its ultimate conclusion, a decision favorable to the government might have been used as a basis for riding roughshod over all protests against the eventual socialization of medical practice on the grounds that it is a criminal violation of antitrust legislation.

The decision is soundly based. Medicine deals with the greatest of all issues—human life or death—and it cannot be limited or made subservient to the laws enacted to regulate merely commercial pursuits. The profession has a long and honorable tradition, rooted in a basic humanitarianism and self-sacrificing spirit which no hard-and-fast legal formula can define. There are admitted faults and inequities in the relationship of the medical profession in America to its 130,000,000 clients. But organized medicine is moving constructively and intelligently toward the solution of these problems and has been doing so without jeopardizing the highest grade of medical service and the best standards of research that obtain anywhere in the world today.

The time will come when better medical service will be available to more people at less cost. The medical profession recognizes this truth and is progressing steadily toward this goal on its own initiative. It is a goal which will be more fully realized if the meddling hand of politics is kept off the "noblest of the professions."

A. M. A. IN COURT

The New York *Times*
July 28, 1939

Most laymen will probably agree with at least one ground of the decision of Justice Proctor of the District of Columbia Federal Court dismissing the antitrust indictment against the American Medical Association. This is that, to apply the Sherman Act, forbidding restraint of trade, to the medical profession "represents an extreme position which does violence to the common understanding of the word 'trade.'" "To stretch an old statute to fit to new uses for which it was never intended," the court contends, "would be nothing short of judicial legislation."

The court dismisses the indictment also on the ground that it is indifferent and uncertain and lacking in material facts. But even though the A. M. A. has won a legal victory and even though it may hold it against a government appeal, the broader problem which led to the government's action remains. The American Medical Association cannot afford to oppose sincere efforts toward voluntary group action to provide adequate medical care for the needy. It is in its own interest, on the contrary, to cooperate actively to forward any plan which seems promising. Only the success of such voluntary group efforts is likely to prevent eventual resort to compulsory health insurance.

A 'LEARNED PROFESSION'

The Washington (D. C.) *Evening Star*
July 27, 1939

The practice of medicine is not a trade, according to Justice James M. Proctor of District Court. It is a "learned profession," as the American Medical Association has contended, and, as such, is beyond the purview of the Sherman Anti-Trust Act. By this interpretation of the law, the court—unless overruled by higher authority—has knocked the legal foundation from the charges brought by the federal government against the American Medical Association, the District Medical Society and other representatives of organized medicine. The corner stone of the government's case was the contention that physicians, in selling their services to the ailing, were tradesmen, within the meaning of the statute, just as patently as those who sell potatoes or who make automobiles. It was on this premise that a corps of special assistants to the Attorney General obtained from a special grand jury an indictment accusing the A. M. A. and certain affiliated societies and officers of conspiring to exercise "restraints of trade" against Group Health Association, Inc., local prepayment medical cooperative for federal employees.

Justice Proctor has thrown into sharper relief some of the legal issues involved in this unprecedented proceeding. Referring to the Supreme Court ruling cited in these columns last December, he held that the high court has excepted employment or business "in the liberal arts or in the learned professions" from the jurisdictional sphere of the Sherman Act. The practice of medicine, he pointed out, "admittedly" is one of the "learned professions." Carrying this reasoning further, he ruled that a grouping of professional men for the cooperative practice of medicine and for hospitalization of patients does not involve "manual or mercantile pursuits" within the meaning of the antitrust laws.

Cartoon in the Washington (D. C.) *Evening Star*
July 27, 1939

Justice Proctor has not, of course, settled the bitter controversy which has raged around the Group Health movement here and in other cities; nor has he brought to an end the battle in the courts between the aggressive Anti-Trust Division of the Department of Justice and the firmly intrenched forces of the A. M. A. and its co-defendants. Already the department has taken vigorous exception to the opinion and, in a public statement, has announced that federal attorneys are preparing to carry the fight to higher tribunals. It will be to the advantage of the physicians and the public as well to have the technical issues of antitrust jurisdiction in the field of medical practice finally resolved. And if the Supreme Court should send the case back to District Court for trial on its merits, that course, too, should be welcomed by the doctors named in the indictment—for only in that way will they have a fair chance to answer categorically in open court the serious imputations contained in the government's indictment which, if sustained, would have a far-reaching effect on organized medicine.

NOT A TRADE

The Baltimore (Md.) *Sun*
July 27, 1939

Justice Proctor in the District of Columbia Court has ruled that medical practice is not a trade within the meaning of the Sherman Anti-Trust Law. The ruling upsets the theory that the antitrust laws could be involved to break up an alleged medical monopoly and force the medical societies in Washington and everywhere else to recognize and even cooperate with ventures into the field of cooperative medical practice.

There have been doubts about this theory from the beginning. It was clear that the medical societies, including the American Medical Association, which was a defendant in the District of Columbia case, were not opposing cooperative

Oh, Most Upright Judge!

Cartoon in the Baltimore (Md.) *Sun*, July 27, 1939

medical ventures out of sheer greed. It was clear that they were thinking about their standards of professional ethics and that their idea was to prevent any arrangement from becoming general which would break down the close relation between patient and practitioner. To say, as the Department of Justice did in the suit which the District Court has now decided in favor of the defendant physicians, that refusal to sanction certain professional practices was a restraint of trade on the same level as a combination of merchants to fix prices was to stretch the antitrust laws far beyond their original intent and purpose. The court's refusal to indorse this interpretation shows that the original doubts were well founded.

It was unfortunate that Mr. Thurman Arnold, the Assistant Attorney General in charge of antitrust cases, chose to make the prosecution of the District of Columbia medical case the spearhead of the enlarged drive to enforce the Sherman Act to which he dedicated himself on coming to Washington. There is much to be said in favor of this campaign on general principles. Whether all of Mr. Arnold's many engaging theories about the antitrust laws are sound we cannot be sure. But his activities as a trust buster have the merit of putting all those who may be inclined to ignore the laws against restraint of trade on notice that they cannot continue on their way with impunity. And it does emphasize the importance of competition in our economic life in a very promising way. But because this is so it does not follow that the extension of the antitrust laws to issues arising in the professional field was well advised. The ruling of the court against any such extensions seems to be sound sense as well as sound law.

MEDICOS EXONERATED

The Indianapolis (Ind.) *Star*
July 27, 1939

It was not surprising that a federal district court rejected the contention of the government that the American Medical Association's code of ethics and medical practice is a violation of the antitrust act. Counsel was upheld in the declaration that doctors are engaged in a "learned profession" rather than a trade and thus their activities are immune to provisions of the monopoly law.

Recent administration health proposals have been aimed at curbing the policies of organized medicine. Belief has been expressed that the New Dealers hope to establish a centralized, political bureaucracy controlling all activities of the medical profession. A more liberal public health program may modify some of the policies which heretofore have been stoutly defended by the A. M. A. and its subordinate state and local medical societies. That trend, however, should not be considered as implying current illegal, monopolistic practices on the part of organized medicine.

The present case resulted from charges by a group organized in the District of Columbia and supplying medical care for a flat monthly charge. That body alleged that the district medical society was discriminating against it through refusal of hospitals and doctors to receive patients referred by the group system. The Department of Justice obtained indictments against three medical organizations and twenty-one prominent physicians on the ground that they had conspired to restrain "trade."

Government counsel intimated that an appeal would be taken from the ruling of the district court. It is not easy to expect, however, that any court would interpret activities of the medical profession as coming within the scope of ordinary trade practices subject to provisions of the antitrust law.

'VAGUE' STATEMENTS

Washington (D. C.) *Evening Star*
July 28, 1939

In instituting criminal action under the Sherman Anti-Trust Act against the American Medical Association, the District Medical Society, the Harris County (Texas) Medical Society and various officials of those organizations, the Department of Justice proceeded under a provision of law which makes the antitrust statutes applicable within the confines of the District of Columbia, irrespective of whether interstate commerce is affected by the alleged restraints of trade. Government attorneys, before launching their fight against organized medicine, agreed that the battleground would have to be in Washington, for the difficulty of attempting to prove that the practice of medicine has interstate ramifications was conceded. In fact, the Attorney General's office, prior to launching the special grand jury proceedings that resulted in indictment of the A. M. A. and its aforementioned affiliates, announced that the investigation was confined solely to alleged "restraints of trade" against Group Health Association, Inc., within the District of Columbia. Published reports that the inquiry was to be extended into medical fields far beyond the District boundaries were denied, on the ground that the government had no jurisdiction.

It is somewhat surprising, and puzzling, therefore, to read that the department has issued a statement warning the medical profession at large that the decision of Justice James M. Proctor nullifying the indictment brought in the District of Columbia will not alter general plans for proceeding under the antitrust laws against physicians indulging in "boycotts." That other jurisdictions were in mind would seem to be implied by the

assertion that the opinion of the District Court "is not a binding authority on other judges." "It is important to inform physicians generally," the formal statement said, "that until the Supreme Court has acted, the government's prosecution policy toward boycotts in the medical profession is unchanged."

The attorney for the A. M. A. promptly retorted that the department's warning was "impertinent and unnecessary," adding that "as the (Anti-Trust) Division should know, the government has no jurisdiction whatever over the medical profession, save in the District of Columbia." Impertinent or not, the department's statement certainly is not consistent with its established policy nor with previous announcements from the Attorney General's office. It would seem to merit the same criticism which Justice Proctor applied to the indictment drawn up by representatives of the division. He said, among other things, that the indictment "is afflicted with vague and uncertain statements." It might not be "impertinent" to add that he also declared the indictment smacked of a "highly colored, argumentative discourse." Those are serious allegations, not likely to strengthen public confidence in the Anti-Trust Division at a time when the support of public opinion is deemed to be a valuable asset to the government in its commendable antimonopoly efforts.

SOUNDS LIKE GOOD LAW

Detroit (Mich.) *Free Press*
July 27, 1939

The ruling in which Judge James M. Proctor of the United States District Court in the District of Columbia says that the practice of medicine is a profession, not trade, and therefore is outside the scope of the antitrust laws sounds like good law and good sense.

The arguments with which the government undertook to support a contrary view in charging that the American Medical Association and fellow defendants have been guilty of "restraint of trade" within the provisions of the act did not sound like either.

They sounded like an effort to stretch the law in order to make it apply to a matter to which its makers never intended it should apply.

On this account the court ruling, which probably will be challenged by the government before the Supreme Court, is valuable.

Because preservation of the integrity of the spirit and intent of legislation is quite as important as preservation of its text.

Whether there is ground for complaint about the policies and acts of the defendants in the case just decided, on grounds outside those covered by laws and statutes, is, of course, an entirely different subject.

JUST AS EXPECTED

The Atlanta (Ga.) *Constitution*
July 27, 1939

The decision of a federal district court in the government's case against the American Medical Association, charging violation of the Sherman Anti-Trust Act, was but as expected. The court sustained a demurrer filed by the defense, finding that the A. M. A. and its joint defendants are not engaged in a "trade" as defined in the statute.

Thus, it is to be hoped, the court attack against the Medical Association comes to a much-to-be-desired close. There should be, if those in charge of the government case exercise reasonable wisdom, no appeal from the decision. The filing of the case, in the first place, was one of the most fantastic developments of a period of bureaucratic fantasy.

No one with a particle of knowledge concerning the medical profession, its ethics and the quality of the men engaged in its practice could conceive for a moment of any widespread conspiracy within its ranks, in contravention of the law of the land. That doctors, of all people, should be accused of operating a "trust" was, on its face, an absurdity.

There is little room for doubting that the healing professions have brought more unselfish sacrifice, more lasting benefit to the human race than any other. It is their mission to heal and, with rare exceptions, that is the enthusiasm of their life. Pecuniary reward is of minor interest to most physicians.

There is no denial that there is great need of increased medical service and increased hospitalization in this country. Too many sections are without doctors, too many American citizens can find no proper medical service in their need.

But this condition will be improved. It will be a slow and long process, toward the ideal medical provisions for the entire nation. One thing, however, is certain. It will only be reached with the cooperation of the healing professions. Without them, any such effort is foredoomed to failure.

Now that the unnecessary attack on the A. M. A. is apparently over, both sides to the argument should promptly forget and start anew toward the goal that both desire.

PROFESSION, NOT TRADE

Cleveland (Ohio) *Plain Dealer*
July 27, 1939

The Federal Court decision in the District of Columbia holding that practice of medicine is not a trade but a profession is in accord with common sense. From the termination of that distant era when the only surgeons were barbers and when the treatment for every ailment was to bleed the patient—from a vein rather than the pocketbook—the layman has recognized that fact. The American Medical Association takes the issue to the courts and the decision that the Sherman Anti-Trust Act does not apply to the practice of medicine results.

It is a victory for the medical profession. The prosecution contended that organizations and physicians had agreed to forbid group health doctors to practice in Washington hospitals, had refused consultations with them and had threatened them with expulsion from medical societies.

Group health and hospital insurance has been attacked on the grounds that it is an entering wedge for state or socialized medicine. Some have criticized public health agencies on the same basis. It is difficult to follow their course of reasoning. People will continue to select their physicians in the future as they have in the past. Summoning a doctor, except in cases of great emergency, never has been and probably never will be comparable to calling the police or fire department when there is a burglar or a blaze in the house. The personal relation that always has existed between ethical physician and patient should continue.

THE DOCTORS UPHELD

The Chicago (Ill.) *Tribune*
July 28, 1939

The indictment against the American Medical Association, a number of affiliated societies and twenty-one of their officers and members has been dismissed by United States District Judge James M. Proctor. A spokesman for the attorney general has said that an appeal will be taken.

The defendants had been charged with violating the antitrust laws. The judge said there could have been no violation because these laws are directed against conspiracies in business or trade, whereas the practice of medicine is a profession and therefore wholly outside the scope of the acts. Further than that, he found the indictments to be "afflicted with vague and uncertain statements," which "smacked of highly colored argumentative discourse."

The rebuke to the administration and its antitrust division was as sharp as it was merited. The tables have now been turned. The doctors have been acquitted of any intention to violate any law; the administration has been convicted of a conspiracy to abuse the law and its processes.

The indictments were obtained because the doctors, through their associations, had chosen not to fall in with the New Dealers' notions of the way in which medicine should be practiced. As usual, the administration could not tolerate dissent. There was no law which the attorney general could invoke against the doctors and, accordingly, the antitrust law was stretched out of shape to cover the alleged crime.

Perhaps it was thought that the medical societies and their members would lack the courage to fight and would accept a so-called consent decree rather than run the risk of fine and imprisonment. If so, the expectation was disappointed. The doctors refused to consider a shotgun decree, they did fight, and they won a victory which may hearten others in similar circumstances to stand on their rights and resist oppression.

AN ANALYSIS OF EXPENDITURES BY THE UNITED STATES GOVERNMENT FOR MEDICAL, HOSPITAL, HEALTH AND ALLIED SERVICES

The most commonly known branches of the federal government which require appropriations by the Congress for medical, hospital, health and allied services are the Public Health Service (formerly a part of the Treasury Department—now associated with the Social Security Board and other agencies in the Federal Security Agency), the Veterans' Administration and the Children's Bureau, Department of Labor. The extent to which other departments and independent establishments are engaged in medical, hospital, health and allied activities is not generally understood, and even a careful search of the Budget of the United States Government fails to reveal all the appropriations that are devoted to such activities. In many instances, some of the appropriations that are made for one department or establishment are transferred to another department or establishment for administration.

It becomes necessary, therefore, to consult many of the appropriation acts, the annual reports of some of the departments and independent establishments, and occasionally congressional committee hearings, for information not found in the budget on certain allotments of appropriations. Moreover, the appropriations for certain governmental agencies appear in the budget in such form that it is impossible to determine the amounts devoted to the medical, hospital or health phases of their activities. For example, the budget contains no actual expenditures or estimated appropriations for the colleges of medicine, dentistry or pharmacy, the University Health Service, social service or the graduate school activities in these fields under the appropriations listed for Howard University.

Discernible amounts for medical, hospital, health and allied purposes are listed in the budget of the United States under the following headings:

LEGISLATIVE BRANCH.

INDEPENDENT ESTABLISHMENTS:
- Civilian Conservation Corps.
- Civil Service Commission.
- Employees Compensation Commission.
- Federal Trade Commission.
- Railroad Retirement Board.
- Social Security Board.
- Works Progress Administration.
- Home Owners' Loan Corporation.
- Federal Housing Administration.
- Reconstruction Finance Corporation.
- Federal Emergency Administration of Public Works.
- Tennessee Valley Authority.
- Veterans' Administration.

DEPARTMENT OF AGRICULTURE:
- Office of the Secretary.
- Bureau of Animal Industry.
- Bureau of Plant Industry.
- Food and Drug Administration.

DEPARTMENT OF COMMERCE:
- Bureau of the Census.
- Bureau of Marine Inspection and Navigation.
- Bureau of Fisheries.

DEPARTMENT OF THE INTERIOR:
- Bureau of Indian Affairs.
- Government in the Territories.
- Saint Elizabeth Hospital for the Insane.
- Columbia Institution for the Deaf.
- Freedmen's Hospital.
- Howard University.

DEPARTMENT OF JUSTICE.
- Penal and Correctional Institutions.

DEPARTMENT OF LABOR:
- Office of the Secretary.
- Immigration and Naturalization Service.
- Children's Bureau.

NAVY DEPARTMENT:
- Office of the Secretary:
  - Care of lepers, Island of Guam.

DEPARTMENT OF STATE:
- Medical aid for seaman.
- Pan American Sanitary Bureau.
- International Office of Public Health.
- Implementing the Narcotics Convention.
- Tenth Pan American Sanitary Conference.
- Ninth International Congress of Military Medicine and Pharmacy, Rumania.

TREASURY DEPARTMENT:
- Bureau of Narcotics.
- Public Health Service.

WAR DEPARTMENT CIVIL APPROPRIATION:
- Panama Canal.

DISTRICT OF COLUMBIA:
- Sewers.
- Health Department.
- Public Welfare.

The budgets of the United States government list amounts appropriated for purposes that are discernible as medical, hospital, health or allied activities aggregating the following totals for the years specified:

LEGISLATIVE BRANCH:

Actual expenditure, 1938	$ 3,000
Appropriation estimate, 1939	3,500
Appropriation estimate, 1940	3,500

INDEPENDENT ESTABLISHMENTS:

Actual expenditure, 1937	$ 69,435,762
Actual expenditure, 1938	156,443,556
Appropriation estimate, 1939	89,139,641
Appropriation estimate, 1940	78,934,511

REGULAR DEPARTMENTS AND DISTRICT OF COLUMBIA:

Actual expenditure, 1937	$ 46,740,132
Actual expenditure, 1938	50,786,190
Appropriation estimate, 1939	53,457,983
Appropriation estimate, 1940	56,258,951

Totals discernible for legislative branch, independent establishments, regular department and District of Columbia:

Actual expenditure, 1937	$116,175,894
Actual expenditure, 1938	207,229,746
Appropriation estimate, 1939	142,597,624
Appropriation estimate, 1940	135,193,462

The total combined expenditures and appropriations for the Departments of Commerce, Justice, Labor and State for the same period are listed in the budgets as follows:

Actual expenditure, 1937	$134,182,222
Actual expenditure, 1938	124,325,876
Appropriation estimate, 1939	117,781,235
Appropriation estimate, 1940	149,407,496

When the amounts discernible for medical, hospital, health and allied purposes appropriated for the use of these departments are deducted, the totals are:

Actual expenditure, 1937	$125,805,655
Actual expenditure, 1938	112,094,587
Appropriation estimate, 1939	107,223,468
Appropriation estimate, 1940	138,111,705

This listing of discernible amounts of federal funds used by the federal government for medical, hospital, health and allied purposes omits the budget estimate for the Medical Department, War Department, which for 1940 was $1,601,072, and for the Bureau of Medicine and Surgery, Navy Department, which for 1940 was $2,670,000, since it is recognized that the Army and the Navy require their own medical establishments.

The amounts authorized by and appropriated under authority of the Social Security Act (1935) for medical, hospital, health and allied purposes are listed under the agencies designated to administer the funds, viz. the Children's Bureau, Department of Labor and the Public Health Service, Treasury Department. Available sources provide no information as to whether other funds authorized by the Social Security Act are being utilized to provide some other forms of medical, hospital, health or allied services in addition to those for which funds are specifically designated.

It is likewise utterly impossible to arrive at an accurate current amount of expenditures for medical, hospital, health and allied purposes by all independent establishments, since the budget does not clearly indicate amounts for such purposes.

Some of the departments and independent establishments are engaged in activities which would seem to require some medical standards, personnel and services; many of these activities at least have an indirect public health significance. Available sources give no information of any federal funds designated for these purposes. The agencies which may be included in this category are the Bureaus of Air Commerce, Marine Inspection and Navigation, and the National Bureau of Standards in the Department of Commerce; the Bureau of Reclamation, the Bureau of Mines and the Columbia Institution for the Deaf in the Department of the Interior, the Departments of the District of Columbia charged with the general supervision and maintenance of mosquito control, sewers and sewage treatment, collection and disposal of refuse, public playgrounds and swimming and bathing pools, and the health phases of the public school program and the essential medical services required in connection with the District Training School, the Industrial Home for Colored Children and the Home for the Aged and Infirm. Among the independent establishments in this category are the Canal Zone and Alaska Railroad Retirement and Disability Funds, which are presumably required to determine the nature and extent of disability of those who apply for and are entitled to disability benefits administered by these agencies.

A report of the progress of the Works Progress Administration program issued as of the date of June 30, 1938, indicates that a total of $105,454,328 was the total cumulative amount expended as of March 31, 1938, for sanitation and health, of which $85,275,572 represented federal funds. It appears from the report that, among a considerable number of agencies engaged in the sanitation and health projects, close cooperation was secured from the U. S. Public Health Service.

It is impossible from the information that is available to tabulate accurately the amounts of emergency relief appropriations that were allotted to and expended by the U. S. Public Health Service or that were utilized by other agencies for medical, hospital, health or allied purposes. The Budget of the United States Government does, however, contain reference to an allotment of $1,506,338 from emergency relief appropriations to the Public Health Service for assistance for educational, professional and clerical persons for 1937; also an allotment of $965,473 from the emergency relief appropriation of 1936 for the year 1937 for health and sanitation activities in flood stricken areas. It is not clear from the available information whether these items, which appear in the budget for 1939, are included in the cumulative total as of March 31, 1938, appearing in the tabulation on page 8 under Works Progress Administration. They have not been placed in the tabulation on the assumption that they may be included in the cumulative total as given in the Works Progress Administration report.

The Budget of the United States Government for 1940 contains an item under the Treasury Department, Public Health Service, for assistance for educational, professional and clerical persons, allotted from the emergency relief appropriation of 1937, of $316,713 for 1938 and an item of $179,432 received by transfer from the emergency relief and Works Progress Administration for similar purposes for the year 1939. These items are likewise omitted from the tabulations, since it is not clear in what year the allotments were made, and therefore they may be included in the cumulative total aforementioned.

In the Budget of the United States Government for 1939, an amount of $162,138 was the estimated allotment to the U. S. Public Health Service from the emergency relief appropriation for 1935 for the Hot Springs Transient Medical Center Infirmary. The actual amount used for 1938 is given in the 1940 budget as $156,023. In the 1939 budget an additional $190,400 allotted to the Public Health Service from the emergency relief appropriation of 1937 for the Hot Springs Transient Medical Center Infirmary is listed as an estimate for 1938. This amount does not appear in the 1940 budget under the actual amounts used for 1938 for the same purpose. This $190,400 does not appear in the accompanying tabulations, since the available information does not indicate what disposition was made of this allotment.

If therefore it was definitely known that the cumulative total given in the Works Progress Administration report did not contain the aforementioned items, the discernible totals would be increased by $2,471,811 for 1937, $316,713 for 1938 and $179,432 for 1939. The 1937 total might be further increased by $190,400 if the disposition of that amount could be determined.

The listed totals are therefore the nearest approximation that can be made from available sources of information. These approximations are underestimates, except for the Veterans' Administration, and would be increased if it were possible to obtain complete information from all federal agencies representing their total disbursements for all medical, hospital, health and allied activities.

The material contained with the tabulations and the explanations thereof was requested by the subcommittee of the Senate Committee on Education and Labor at the time of the hearings on the Wagner National Health Bill, at which the American Medical Association presented its statements on May 25 and 26, 1939. These tabulations and the accompanying explanations are offered for consideration of the subcommittee and inclusion in the record.

MEDICAL LEGISLATION

DISTRICT OF COLUMBIA

Changes in Status.—S. 2745 has been reported to the Senate, proposing to authorize the Commissioners of the District to promulgate and enforce all such reasonable rules and regulations as they may deem necessary to prevent and control the spread of communicable and preventable diseases in the District of Columbia. S. 2779 has been reported to the Senate, proposing to eliminate from the healing arts practice act of the District of Columbia the requirement that examinations be held on the second Monday in January and July of each year and to provide that such examinations may be held at such times as the Commission on Licensure to Practice the Healing Art may by rule or by special order determine. H. R. 4732 and H. R. 4733 have passed the House and have been reported to the Senate with recommendations that they pass, proposing respectively to provide for the issuance of a license to practice chiropractic in the District of Columbia to George M. Corriveau and to Laura T. Corriveau. H. R. 6266 has passed the House and has been reported to the Senate, proposing to incorporate certain persons as Group Hospitalization, Inc. H. R. 7086 has passed the House and has been reported to the Senate, proposing to provide for insanity proceedings in the District of Columbia.

MEDICAL BILLS IN CONGRESS

Changes in Status.—H. R. 6555 has passed the House and has been reported to the Senate, proposing to amend the act relating to the advance of funds in connection with the enforcement of acts relating to narcotic drugs so as to permit such advances in connection with the enforcement of the Marihuana Tax Act of 1937. H. R. 6556 has passed the House and has been reported to the Senate, providing for the seizure and forfeiture of vessels, vehicles and aircraft used to transport narcotic drugs, firearms and counterfeit coins, obligations, securities and paraphernalia.

GRADUATE MEDICAL EDUCATION

A PROGRESS REPORT OF THE FIELD STUDY ON GRADUATE MEDICAL EDUCATION IN THE UNITED STATES BEING CONDUCTED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

ARIZONA

The Arizona State Medical Association and the Arizona State Board of Health cooperated in sponsoring postgraduate instruction in obstetrics and gynecology in four cities of the state during 1938. Dr. Fred C. Jordan, chairman of the state association's committee on maternal and child health, which was composed of five members, represented the state association and conferred with the director of the Division of Maternal and Child Health of the Arizona State Board of Health. In February 1938 two out of state physicians conducted a series of lectures and discussions in pediatrics and obstetrics in two cities of the state. The instruction began at 5:30 p. m. with a lecture, then dinner, followed by a round table discussion after dinner and three lectures illustrated by movies, a total of twenty-four lectures in the series. Attendance averaged approximately fifty at each session. In May 1938 similar programs were given in obstetrics by another out of state obstetrician in two other towns. During 1939 five other localities will be visited and the more populous sections of the state will have been covered.

In the recent reorganization of the Arizona State Medical Association, the Committee on Maternal and Child Health was made a standing committee with the present three members serving one, two and three years, respectively. Dr. C. B. Warrenburg is temporary chairman of this committee. Another newly created standing committee concerned with scientific education and postgraduate activities has three members, with Dr. F. W. Butler as chairman. Other committees having interest in continuing professional instruction include the committees on scientific assembly, industrial health, syphilis and social diseases, cancer, orthopedics and tuberculosis.

The Southwestern Medical Association was formed twenty-five years ago and its membership includes licensed reputable physicians in Arizona, New Mexico, western Texas and northern Mexico. The annual conference of the association, held each October or November in either Arizona or Texas, is devoted to advancing medical training. Until six years ago local physicians participated with few visiting lecturers. At present ten or twelve guest speakers participate each year and discuss subjects of their own selection. The attendance has averaged from 160 to 180 each year. Approximately 100 physicians come from Texas, thirty from Arizona and the remainder from New Mexico and from Mexico. A registration fee of $5 is charged for the three day clinical conference. Commercial exhibits aid in financing the program.

There are 562 licensed physicians in the state, of whom 356 are members of the Arizona State Medical Association.

WEST VIRGINIA

In 1936 the West Virginia Medical Association with the cooperation and financial aid of the state health department offered practicing physicians of the state postgraduate instruction in pediatrics. The state association's committee on maternal welfare, which includes a member from each council district, and the committee on child hygiene, likewise constituted, acted in an advisory capacity to the health department. The chairman of each committee and the director of the bureau of child hygiene conferred regarding a program, but during the first two years direction and administration was largely by the health department.

Instruction in pediatrics was offered in fifteen cities and larger towns during the first year by a West Virginia pediatrician. Lectures were given the same day each week for six times on a circuit plan. Pediatrics was considered first because of the desire to reduce infant mortality in the state, to stress the need for antepartum care and to prepare for the instruction in obstetrics which was proposed for 1937. About 170 physicians registered for the 1936 postgraduate course.

During July and August 1937 five lectures were given in ten other cities and towns of the state. Two out of state obstetricians gave a total of three lectures in obstetrics in each locality and two out of state pediatricians gave two lectures in pediatrics. Instruction was offered at weekly intervals following the circuit plan. Approximately 280 physicians attended these courses in 1937.

As a result of the experience of the first two years and of the desire on the part of the members of the state association's committees to create greater interest in postgraduate study, the state health department agreed to allow the state medical association to administer the postgraduate courses during 1938. Under this plan the state association took a more active part in promoting the courses and in procuring the sponsorship of the county medical societies. With the financial assistance of the health department, the employment of competent instructors was assured. The office of the executive secretary was responsible for the direction and administration of the teaching program. The committee on infant and maternal welfare of the state association, consisting of the chairmen of the committees on maternal welfare and on child welfare and the director of the bureau of child hygiene of the state health department, offered the county societies of the state the resources of the committee. Two circuits were planned with eight towns in each in the rural sections of the state. Since these county societies represent sections of the state not previously covered, it is probable that by the end of this year all parts of the state will have been visited. Four out of state instructors have been

secured. The first three lectures in each locality will be devoted to obstetrics and the last two to pediatrics. It is anticipated that the physicians who could not attend the courses given in previous years will avail themselves of the state association's present program. Approximately 150 have registered. No registration fees have been charged since 1936.

There are 1,823 physicians licensed in the state, 1,240 of whom are members of the West Virginia State Medical Association.

MEDICAL ECONOMIC ABSTRACTS

PREVENTIVE MEDICINE IN CHILE

The following are summaries of two articles by Dr. Carlos Maldonado B., director of medical services of the Department of Compulsory Insurance, on medical-social laws recently passed in Chile, which appeared in the *Boletin medico social de la caja de seguro obligatorio* (**5**:281 [Aug., Sept., Oct.], 414 [Nov., Dec.] 1938).

The Law 6174

The Law 6174, or the Cruz Coke Law, on preventive medicine is believed to be one of the most important social-economic laws promulgated in the last few years in Chile. This law is of great importance to the Department of Compulsory Insurance, which is interested in preventive medicine as one of the means of avoiding the high cost of morbidity. It brings out the true importance of health examinations which makes it possible to discover and treat illnesses most effectively. For example, among the supposedly healthy insured persons examined in factories it was discovered that 37.9 per cent needed medical attention. Of these 11.7 per cent had contagious diseases, 3 per cent tuberculosis and 5.1 per cent afflictions of the circulatory system. It was estimated that 60 per cent of the morbidity is due to illnesses of these three classifications and that they are also the cause of the greatest percentage of disability and death.

The law requires compulsory treatment for contagious diseases. This will permit early treatment of 10 per cent of the illnesses of working men which are the primary cause of disability among those now receiving disability compensation. Hitherto persons with contagious disease were treated only in the first period of illness and did not submit to further examination until the disease had produced disability. The number of infected persons who continued treatment until completely cured was about 8 per cent.

One of the most serious problems at present is the number of insured persons infected with tuberculosis. Of 8,090 deaths in 1936, 29.73 per cent were due to tuberculosis, and in 1937 of 8,511 deaths 31.18 per cent were caused by tuberculosis. Among the causes of disability it is in second place and caused 20.3 per cent of the disability in the last three years.

Previous to this law the disability compensation granted was so small that many infected persons continued working rather than submit to treatments. Under the earlier law compensation after the third week of disability was reduced to 25 per cent of the normal wage and the workman could not maintain himself and his family on such a reduced income. Therefore a large number of tuberculous patients would leave the sanatorium before they were completely cured, with the result that they would have to return again in a short time with a much smaller chance of complete recovery. The new law provides for a rest period for the tuberculous patient during which he is paid his total salary.

Infections of the circulatory system are the principal cause of disability, constituting 32.7 per cent. A considerable number of persons have some sort of infection of the circulatory system, as shown in examinations of supposedly healthy persons. Of those examined 5.1 per cent had defects of the circulatory system, of which about 10 per cent were so serious that the person should not be allowed to continue working. Until now nothing has been done in Chile to provide proper employment or medical treatment for persons with heart disease unless the person became seriously ill. Under this new law provisions are made for rest in a sanatorium and changes of occupation and residence, through the assistance of the Institute of Rehabilitation, which was created to deal with this problem.

Rural Sanitation

The rural population of Chile makes up 52 per cent of the total population and therefore problems of rural sanitation are of great importance. Although the density of the population is 5.6 per square kilometer, in reality the density is much greater because there are enormous stretches of uninhabited deserts.

Rural morbidity differs but little from urban, but the rural population is not as well protected from infectious diseases such as typhoid, scabies, chickenpox and venereal disease. The director of rural sanitation, because of limited resources, has aimed primarily toward health education in cooperation with municipal health organizations and has attempted to bring about improvements in respect to pure water, more sanitary toilets and control of infectious diseases, as in other countries.

The improvement of rural medicine should receive more attention from the Department of Compulsory Insurance, which has established medical facilities for its clients. These facilities consist of 164 rural medical stations and 365 distributing centers throughout the country. Doctors in nearby cities spend certain days or hours in the distributing centers, during which time the insured persons may obtain medical services. The rural medical stations do not have a medical officer in residence but are attended by the personnel from the nearest distributing center, and certain doctors make periodic visits to these stations.

There are also forty-eight first aid stations with a doctor in charge and with beds for the hospitalization of emergency cases. These first aid stations not only provide curative medicine but also preventive medicine, such as antepartum care, obstetric care and medical care for children under 2 years of age, as well as treatment and control of contagious disease. Some of these stations have laboratories in order to facilitate diagnosis and treatment. The officers in these stations also try to educate the residents on the value of sanitation.

The rural housing problem is very serious. A large part of the rural population live in inadequate and insanitary houses and do not practice the most elementary principles of hygiene. The governor obtained from the national congress permission to establish a department of housing the purpose of which is to encourage the building of low cost houses for laborers, farmers and their families. This department is directed by the minister of labor and received an appropriation of $4,000,000 to be used for the following purposes:

1. Construction of houses under the direction of the department.
2. To make loans for buildings.
3. The urbanization of industrial districts constructed before this law was passed.
4. To encourage the raising of home produce and the development of domestic industries.

This law makes it especially easy for the proprietors of large farms to obtain loans at low interest, which are to be used exclusively for the construction of houses for their tenants. The borrowers are compelled to construct homes according to the law, which established severe penalties for any infractions. In order to encourage such building the department will lend about $360 for each house. A permanent commission of housing is directly under the director general of sanitation and is requested to consult with engineers, doctors, scientific institutions and other organizations in regard to the construction of houses and the disposal of waste and sewage.

The farmers have looked forward to the application of this law, which was passed in February 1937, and have given it their support. In the province of Santiago a Farmers' Union was organized for the purpose of cooperating in the construction of houses and to bring about improvements in rural health sanitation. No important results will be observed at once, but this plan in conjunction with the social security plan under the minister of health should bring rapid improvement in the medical and social conditions in this country.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Society News.—Dr. William L. Miller, Gadsden, discussed food allergy before the Etowah County Medical Society June 20 at a meeting in Gadsden.——Dr. John C. Burch, Nashville, Tenn., discussed "Medical and Surgical Treatment of Menstrual Disorders" before the Calhoun County Medical Society in Anniston May 23.

Personal.—Dr. Jeptha W. Dennis, Montgomery, has been appointed college physician and director of the student health service at the Alabama Polytechnic Institute, Auburn, effective September 1. He will succeed Dr. Benjamin F. Thomas, who has resigned to devote his full time to the practice of medicine in Auburn.

CALIFORNIA

Hospital News.—Ground-breaking ceremonies for the first unit of the Mount Sinai free medical clinic in Los Angeles were held June 25. The $250,000 unit will be dedicated to charitable service without question of creed, race or color.——Dr. Burton W. Adams, Oakland, has been appointed superintendent of the San Diego County Hospital, San Diego.

Changes in the Faculty at California.—Recent promotions on the staff of the University of California Medical School, San Francisco, include:

Dr. Israel L. Chaikoff, to be associate professor of physiology.
Paul L. Kirk, Ph.D., associate professor of biochemistry.
Dr. Amos U. Christie, associate professor of pediatrics.
Dr. William C. Deamer, associate professor of pediatrics.
Dr. Dudley W. Bennett, associate clinical professor of medicine.
Dr. Myrl Morris, associate clinical professor of pediatrics.
Dr. M. Laurence Montgomery, associate clinical professor of surgery.

Dr. Walter L. Treadway, U. S. Public Health Service, has been appointed lecturer in psychiatry and Dr. Olga L. Bridgman, professor of pediatrics and psychology, has been granted a sabbatical leave of absence from January to June 1940.

COLORADO

Society News.—The Washington-Yuma County Medical Society was addressed July 3 in Wray by Drs. Roderick J. McDonald Jr., Denver, on "Streptococcic Infections" and Jack G. Hutton, Denver, "Dermatologic Conditions and Their Treatment."——At a meeting of the Northeast Colorado Medical Society, Sterling, June 8, Dr. Henry A. Buchtel, Denver, discussed "The Place of the Urologist in the Practice of Medicine."——The Delta County Medical Society was addressed in Delta recently by Dr. Robert A. Underwood, Delta, on hypertension.

CONNECTICUT

Personal.—Dr. John D. Milburn, East Hampton, has resigned as medical examiner and announced his retirement from active practice. He will be succeeded as medical examiner by Dr. Norman H. Gardner.

Changes in Health Officers.—Dr. Albert E. Childs, Litchfield, has been appointed health officer for the borough of Bantam, according to the *Connecticut Health Bulletin*. Other changes noted include:

Dr. Noah A. Burr of Haddam.
Dr. Charles E. McPartland of West Hartford, succeeding Dr. Harry B. Smith.
Dr. Frederick B. Dart of East Lyme to complete the unexpired term of the late Dr. Frederick H. Dart.
Dr. Albert J. Trimpert of Redding to succeed the late Dr. Ernest H. Smith.

DISTRICT OF COLUMBIA

Committee on Automobile Accidents.—At the annual business meeting of the Medical Society of the District of Columbia, Washington, May 3 the establishment of a committee on automobile accidents was authorized to study the accident situation from the medical standpoint and to cooperate with the traffic advisory council of Washington. This action was taken after a request had been received from the council asking the society's cooperation in an educational campaign to prevent a recurrence of the child traffic fatalities of last summer, according to the *Medical Annals*. Statistics from the safety and traffic engineering department of the District of Columbia Motor Club show that of 821 fatality victims in the District from Jan. 1, 1931, to Nov. 30, 1938, 579 were pedestrians. During the period twenty-seven pedestrians were injured to every pedestrian killed. An analysis shows that the fatalities of this group increase sharply after the age of 50 and that the hazard is much greater by night than by day. During the period from 1931 to 1938, 106 children were killed in traffic and in 1938 alone 888 child pedestrians suffered injuries. Members of the new committee are Drs. William Warren Sager, chairman; Edgar Leonard Goodman, Paul J. O'Donnell, Morris I. Bierman and Herbert S. Gates.

FLORIDA

State Law Regulates Drug Prescriptions.—Five dangerous drugs may be dispensed only on a written prescription signed by a duly registered physician, dentist or veterinarian in accordance with one section of the new state food, drug and cosmetic act which went into effect July 1. The drugs are aminopyrine, barbituric acid, cinchophen, dinitrophenol and sulfanilamide.

Members of Medical Board.—Dr. Samuel G. Hollingsworth, Bradenton, was named president of the Florida State Board of Medical Examiners at its semiannual meeting June 20 and Dr. Benjamin A. Chapman, Jacksonville, vice president. Dr. William M. Rowlett, Tampa, was reelected secretary. Other members of the board include Drs. Harold D. Van Schaick, Jacksonville; Julius C. Davis, Quincy; James E. Crump, Winterhaven; Horace A. Day, Orlando; Thomas W. Hutson, Miami; Corbett E. Tumlin, Miami, and Carl A. Williams, St. Petersburg.

IDAHO

Society News.—A recent meeting of the North Idaho Medical Society in Lewiston was addressed by Drs. James W. Mounsey and Robert G. Boyd, both of Spokane, Wash., on various types of malignancy and cervicitis, respectively.——The South Side Medical Society was addressed in Burley recently by Drs. Kenneth B. Castleton on "Duodenal Surgery" and Richard P. Middleton, "Renal Surgery"; both are from Salt Lake City.

INDIANA

Postgraduate Conference on Obstetrics.—The Grant County Medical Society conducted a postgraduate conference on obstetrics at the Marion General Hospital, Marion, June 13-15. Cooperating with the society were the committee on postgraduate education of the Indiana State Medical Association, the department of postgraduate education of the Indiana University School of Medicine and the bureau of maternal and child health of the state board of health. Dr. Carl P. Huber, resident adviser and research director in obstetrics and gynecology, Indiana University School of Medicine, Indianapolis, was in charge. This conference is the first of scheduled programs of postgraduate education to be carried to selected areas throughout the state.

IOWA

Twin Lakes District Meeting.—A dry diagnostic clinic, comprising the sixteenth annual assembly of the Twin Lakes District Medical Society, was held at Rockwell City June 15. The participants were:

Dr. Harold C. Habein, Rochester, Minn., Medical Emergencies.
Dr. August A. Werner, St. Louis, Endocrinology.
Dr. William P. Wherry, Omaha, Otolaryngology.
Dr. Italo F. Volini, Chicago, Medicine.
Dr. Michael L. Mason, Chicago, Surgical Emergencies.

Dr. Louis B. Wilson, Rochester, Minn., presented an address entitled "The Education of a Doctor" and Dr. Ernest E. Shaw, Indianola, chairman, medical economics committee, state medical society, presided at a round table on medical economics.

KENTUCKY

New Health Officers.—Dr. Frank Kash Sewell, Madisonville, has been appointed health officer of Breathitt County. Dr. Andrew B. Colley, Tompkinsville, has been appointed health officer of Webster County to succeed Dr. Charles M. Smith, Dixon, resigned.

Society News.—Drs. George K. Carpenter and David W. Hailey, Nashville, Tenn., addressed the Christian County Medical Society, Hopkinsville, June 20, on "Relationship of Syphilis to Bone Trauma" and "Management of Nephritis" respectively.——Drs. John B. Youmans and Rudolph H. Kampmeier, Nashville, addressed the Hopkins County Medical

Society, Madisonville, June 6 on "Practical Aspects of Vitamin Deficiency" and "Clinical Aspects of Lymphogranuloma Venereum" respectively.——At a meeting of the Eleventh Councilor District of the Kentucky State Medical Association in Harlan recently the speakers were Drs. Maurice G. Buckles on "Modern Concepts of Pulmonary Tuberculosis"; Harry S. Andrews, "Treatment of Pneumonia in Children," and Irvin Abell Jr., "Empyema." All are of Louisville.——Dr. Paul A. Turner, Louisville, was named president-elect of the Kentucky Hospital Association at the recent annual meeting and Dr. Edward J. Murray, Lexington, became president.

LOUISIANA

Society News.—The Orleans Parish Medical Society held a clinical meeting at the U. S. Marine Hospital June 26; the speakers were Drs. Joseph G. Pasternack on "Hodgkin's Disease, an Experimental Study of the Etiology" and John A. Trautman, "Lymphogranuloma Inguinale: Treatment with Sulfanilamide, and by Pyretotherapy."——The Lafourche Valley Medical Society was addressed June 21 by Drs. Henry C. Dansereau, Labadieville, on "Preventive Medicine: A Plea for Its Greater Popularization by the General Practitioner"; Louis A. Monte, New Orleans, "Treatment of Acute Disorders Due to Some of the Chemical and Physical Agents," and Edgar Hull, New Orleans, "Remediable Factors in Heart Disease."

Personal.—Dr. Wilbur C. Smith, professor and head of the department of gross anatomy, Tulane University of Louisiana School of Medicine, New Orleans, and athletic director of the university, received an honorary degree of doctor of science from Wake Forest College, Wake Forest, N. C., at the recent commencement exercises. Dr. Smith was head of the department of anatomy at Wake Forest for three years prior to coming to Tulane.——Dr. Emmett L. Irwin has been named head of the health and safety committee of the New Orleans Area Council, Boy Scouts of America. This committee is planning a program for the education of scouts in safety skill and health practices and the rendering of service in time of emergency and disaster.

MARYLAND

Dr. Barker Named Assistant Dean.—Dr. William Halsey Barker, instructor in medicine, Johns Hopkins University School of Medicine, Baltimore, has been appointed assistant dean of the medical school. In this newly created position he will aid Dr. Alan M. Chesney, dean, chiefly in the field of student relations. He will also serve as a member of the committee on admissions of the medical school. Dr. Barker graduated at Johns Hopkins in 1932. He is the son of Dr. and Mrs. Lewellys F. Barker, Baltimore.

Association of Laboratory Workers.—The Maryland Association of Medical and Public Health Laboratories has been organized to collaborate with official agencies in the development of effective routine laboratory procedure. Membership is open to all who are either directly or indirectly engaged in such work in the state. The executive council of the association is composed of the president, Mr. Edward G. Gummell, Silver Spring; Dr. Albert A. Pearre, Frederick; the secretary-treasurer, Miss Florence R. Hill, 402 Compton Avenue, Laurel; Dr. Harry Eagle, Baltimore, and Dr. Ira A. Darling, Sykesville.

MASSACHUSETTS

Memorial to Dr. Hawes.—The Boston Tuberculosis Association announces plans to establish a memorial to the late Dr. John B. Hawes 2d, formerly president of the association. A memorial in the form of a fund to sponsor an annual lecture in tuberculosis is under consideration. Prior to his death in 1938, Dr. Hawes had served, among other things, as director of the Rutland Cottage Sanatoria, Rutland, and consultant in diseases of the lungs to the U. S. Veterans' Administration. He had written extensively on pulmonary diseases.

Personal.—Dr. Hans Zinsser, Charles Wilder professor of bacteriology and immunology, Harvard Medical School, Boston, received the honorary degree of doctor of science from Yale University at the recent annual commencement in New Haven.——The degree of doctor of science was conferred on Drs. Joseph Emmons Briggs, Boston, and William O. Faxon, Stoughton, Mass., by Boston University School of Medicine at the annual commencement June 12. Both physicians are graduates of the school. Dr. Faxon is said to be the oldest living graduate of the school of medicine.——Dr. George B. Wislocki, Parkman professor of anatomy, Harvard Medical School, has been appointed an associate editor of the *American Journal of Anatomy*.

MICHIGAN

Upper Peninsula Meeting.—The Upper Peninsula Medical Society will hold its annual meeting in Escanaba August 23-24. The state medical journal prints the following tentative program:

Dr. Henry F. Helmholz, Rochester, Minn., Urinary Tract Infections in Children.
Dr. Leo G. Christian, Lansing, Serum Treatment of Pneumonia.
Dr. Francis D. Murphy, Milwaukee, Problems in Clinical Medicine.
Dr. William E. Blodgett, Detroit, First Aid Treatment of Fractures.
Dr. Henry R. Carstens, Detroit, Peripheral Vascular Disease.
Dr. Horton R. Casparis, Nashville, Tenn., Tuberculosis.
Dr. John T. Murphy, Toledo, Ohio (subject not announced).

Dr. William W. Bauer, Director, Bureau of Health Education, Chicago, will speak at the banquet August 23 on "Popular Beliefs That Are Not So."

Appointments to Wayne University.—Frederick F. Yonkman, Ph.D., formerly associate professor of pharmacology at Boston University College of Medicine, Boston, has been appointed professor of pharmacology and therapeutics and head of the department at Wayne University College of Medicine, Detroit, according to an announcement. Dr. Arnold J. Lehman, formerly instructor in pharmacology at Stanford University College of Medicine, San Francisco, and recently assistant professor of pharmacology at George Washington University Medical School, Washington, D. C., has been appointed research associate in pharmacology and therapeutics with the rank of assistant professor. Dr. Harold F. Chase, formerly assistant in pharmacology, Boston University College of Medicine, has been appointed instructor in pharmacology. The promotion of Dr. Edgar H. Norris, professor of pathology (in charge of teaching), to be head of the department is also announced.

State Society Appoints Field Representatives.—The Michigan State Medical Society announces the appointment of field representatives in the various specialties of medicine and surgery as a part of the program of postgraduate education for physicians throughout the state. Drs. Alexander M. Campbell, Grand Rapids, and Clair E. Folsome, Ann Arbor, have been named field representatives in obstetrics and maternal health, and Dr. Clifford H. Keene, Ann Arbor, field representative in cancer. Later appointments in pediatrics and venereal diseases are being planned. Policies and plans of the representatives are arranged and supervised by a committee of the state medical society. The field representatives spend several weeks in a county to make available the latest advances in diagnosis and treatment in their special field of training. Their contacts are made only through organized county medical units, and their services consist of lectures, hospital staff conferences, personal interviews with physicians, small group conferences and informal association with the physicians at their request.

NEW YORK

Dr. Hutchings Retires.—Dr. Richard H. Hutchings, superintendent of Utica State Hospital for twenty years, has retired from the state service, having reached the age limit. Dr. Hutchings graduated from Bellevue Hospital Medical College in 1891. He was at one time superintendent of the St. Lawrence State Hospital, Ogdensburg, and formerly professor of clinical psychiatry at Syracuse University College of Medicine, Syracuse. In 1938 he was president of the American Psychiatric Association.

Society News.—At a meeting of the Medical Society of the County of Albany June 28 the speakers were Drs. James A. Hogan on "Lymphogranuloma Venereum"; Harold P. McGan, "Allergic Conditions That Are Frequently Overlooked," and William P. Howard, "Sciatic Pain: Its Relation to Displacement of Intervertebral Disks."——Dr. Frederick W. Williams, New York, addressed the Medical Society of the County of Monroe, Rochester, in May on "Modern Concepts of Diabetic Lesions of the Lower Extremities."

New York City

Hebrew Medical Texts.—The Jewish Theological Seminary of America, Broadway and One Hundred and Twenty-Second Street, invites physicians to visit a summer exhibition of rare old medical texts in Hebrew. The books and manuscripts are from the pens of such writers as Isaac Israeli, Maimonides, Pope John XXI, Nathan ben Joel Falaguera, Moses Narboni and Abraham Kaslari. The exhibition is in the museum of the seminary and is open every day from 10 to 5 o'clock except Fridays and Saturdays.

The New Memorial Hospital.—The new $5,000,000 building of the Memorial Hospital for the Treatment of Cancer and Allied Diseases at York Avenue and Sixty-Eighth Street was dedicated June 14. In the morning the following addresses were presented:

Dr. Burton T. Simpson, director, State Institute for the Study of Malignant Disease, Buffalo, Pioneer Cancer Institutes in America.
Dr. Frank E. Adair, attending surgeon and executive officer of Memorial Hospital, The Position of a Cancer Institute in Relation to the General Medical Profession.
Dr. Lloyd F. Craver, attending physician at the hospital, Graduate Education in Memorial Hospital.
Dr. James Ewing, director of the hospital, The Planning of the Memorial Hospital Building.
William D. Coolidge, Ph.D., director, research laboratories, General Electric Company, Schenectady, Contributions of the Physical Sciences to Cancer Therapy.

The formal opening and dedication took place at 3 o'clock in the afternoon with the following speakers: Hon. Jacob Gould Schurman, Ph.D., former president of Cornell University; Dr. Ludvig Hektoen, director, National Cancer Council, Washington, D. C.; Dr. Sigismund S. Goldwater, commissioner of hospitals, and Mr. Harry Pelham Robbins, president

Paul Parker Photo

The New Memorial Hospital.

of the hospital. The new building, with 169 beds and twelve stories high, is said to be the largest institution of its kind in the world. Funds for its construction were provided by a grant of $3,000,000 from the General Education Board and one of $500,000 from Edward S. Harkness. The site was donated by John D. Rockefeller Jr. Ground was broken June 8, 1937, and the cornerstone was laid May 20, 1938. The new hospital adjoins the Rockefeller Institute for Medical Research, Cornell University Medical College and the New York Hospital. It is equipped with new types of x-ray tubes, one of a million volts and others of 250,000 volts each. Sixty patients in the old hospital were to be removed June 15, and the hospital's supply of radium, 8.5 Gm., valued at $212,500, was moved later in the week to the lead-lined vault in the new building.

NORTH CAROLINA

Clinic for Venereal Disease.—Six Smithfield physicians have established a weekly clinic for persons with venereal disease who are unable to pay for private treatment but are ineligible for relief. The physicians will take turns at the clinic and will be assisted by a public health nurse. Those participating are Drs. John H. Fitzgerald, George A. McLemore, Abraham H. Rose, Thaddeus G. Upchurch, Charles Watson Wharton and William G. Wilson Jr.

Society News.—Dr. John W. Kinley, Asheville, addressed the Buncombe County Medical Society, Asheville, June 5 on "The Care of Your Patient's Central Nervous System."——Dr. James H. McNeill, North Wilkesboro, addressed the Forsyth County Medical Society, Winston-Salem, May 23 on "The Electrocardiogram as an Aid in Diagnosis."——At a meeting of the Catawba Valley Medical Society May 23 in Hickory, the speakers were Drs. Abel L. Hill, Kings Mountain, on "Dermatophytosis"; Glenn R. Frye, Hickory, "Surgery and the Neurotic Patient," and Silas Raymond Thompson, Charlotte, "Mortality in Prostatic Surgery."

Public Health Association Meeting.—Dr. John W. Williams, Asheville, was chosen president-elect of the North Carolina Public Health Association at its annual meeting in Greensboro in May and Dr. Avon H. Elliot, Wilmington, became president. Dr. William P. Richardson, Chapel Hill, was elected vice president and Dr. John W. Roy Norton, Chapel Hill, secretary. Speakers at the meeting included Drs. John A. Ferrell of the International Health Division of the Rockefeller Foundation, New York; John F. Kendrick, Raleigh; Thomas W. M. Long, Roanoke Rapids, secretary of the Medical Society of the State of North Carolina; Louis L. Williams Jr. and Mark V. Ziegler of the U. S. Public Health Service. Henry F. Vaughan, Dr.P.H., health commissioner of Detroit, was the speaker at a banquet.

OHIO

Medical Librarian Retires.—Mr. John Charles Harding, librarian of the Cleveland Medical Library Association since 1906, has retired because of ill health. Mr. Harding first became associated with the library in 1898, when Mrs. Harding was librarian. He served as assistant librarian, keeping the library open in the evenings. In 1906 he became librarian and took part in selecting and building up a collection of more than 53,000 volumes. Mr. Harding was active in the Medical Library Association and was editor of its bulletin for many years. He will go to San Diego, Calif., to live.

Changes in Health Officers.—Dr. Chester S. Heimlich, Attica, has been appointed health officer of Seneca County.——Dr. Lloyd E. Overhulse, Holgate, has been appointed health commissioner of Henry County to succeed Dr. Julius R. Bolles, Napoleon.——Dr. Irvin B. Kievit, Medina, recently resigned as health commisioner of Medina County.——Dr. Geraldine M. H. Crocker, Granville, has been appointed health commissioner of Licking County.——Dr. James I. Nisbet, Eaton, has resigned as health commissioner of Preble County and has been succeeded by Dr. Carle W. Beane, West Manchester.——Dr. Harry Wain, formerly of Chicago, has been appointed health officer of Sidney and Shelby County.

PENNSYLVANIA

Society News.—Dr. Andrew P. D'Zmura, Pittsburgh, addressed the Westmoreland County Medical Society at a meeting at the Mountain View Hotel near Greensburg June 20 on "The Care of Patients Having Early Stages of Heart Failure."——Dr. Leslie N. Gay, Baltimore, addressed the Cambria County Medical Society, Johnstown, June 8 on allergy.——Dr. William James Gardner, Cleveland, addressed the Washington County Medical Society, Washington, June 14 on "The Late Results of Craniocerebral Trauma."——Dr. Frank W. Burge, Philadelphia, addressed the Lycoming County Medical Society, Williamsport, June 9 on "The Pennsylvania Plan for Tuberculosis Control and New Trends in the Treatment of Pulmonary Tuberculosis."

Philadelphia

Promotions at Temple University.—Dr. Reuben Friedman has been promoted to be assistant professor of dermatology and syphilology at Temple University School of Medicine; Dr. Michael Scott, assistant professor of neurosurgery, and Dr. Glen G. Gibson, assistant professor of ophthalmology. Dr. Henry J. Off has been made emeritus professor of otology.

Personal.—An oil portrait of Dr. William H. Teller was presented to the Jewish Hospital June 12 by the staff. Dr. Teller, now surgeon emeritus, served fifty years on the staff.——Dr. Douglas P. Murphy will deliver a paper at the seventh International Congress on Genetics in Edinburgh, Scotland, August 23-30 on "Reproductive Characteristics of the Parents of Congenitally Malformed Children."——Jesse F. McClendon, Ph.D., professor of physiologic chemistry, University of Minnesota Medical School, Minneapolis, has been appointed research professor of physiology at Hahnemann Medical College.

RHODE ISLAND

State Medical Election.—Dr. Charles H. Holt, Pawtucket, was elected president of the Rhode Island Medical Society at the annual meeting in Providence June 7-8. Drs. Lucius C. Kingman and Frederic V. Hussey, Providence, were elected vice presidents and Dr. Guy W. Wells, Providence, is secretary.

SOUTH CAROLINA

Faculty Changes at Medical College. — At the annual commencement of the Medical College of the State of South Carolina, Charleston, June 1, it was announced that Dr. Archibald J. Buist had resigned as professor of obstetrics and gynecology and had been made professor emeritus. In addition the following promotions were announced:

Dr. Bernard S. Kalayjian, to be assistant professor of radiology and electrotherapy.
Chester A. Swinyard, Ph.D., assistant professor of anatomy.
Dr. Mylnor W. Beach, professor of pediatrics.
Dr. William H. Kelley, professor of medicine.
Dr. Frederick E. Kredel, professor of surgery.
Dr. Robert B. Taft, professor of radiology and electrotherapy.
Dr. Frank A. Hoshall, professor of orthopedics.

Society News.—Dr. Everett E. Herlong, Rock Hill, was elected president of the South Carolina Urological Association at its recent annual meeting in Columbia.——Dr. Walter E. Vest, Huntington, W. Va., addressed the Columbia Medical Society June 12 on the Wagner bill and Dr. William Weston Jr., Columbia, discussed anterior poliomyelitis. The society held its monthly meeting July 10 at the Veterans' Administration Facility with a clinical program presented by the hospital staff.——Dr. Louis Schwartz, U. S. Public Health Service, Bethesda, Md., addressed the Greenville County Medical Society, Greenville, May 1 on diseases of the skin caused by exposure to dyes. At the June meeting Dr. Robert M. Dacus Jr., among others, spoke on "Anemias of Pregnancy."——Dr. Gerald E. McDaniel, epidemiologist of the state board of health, Columbia, addressed the Anderson County Medical Society, Anderson, June 14 on "Epidemiology, Symptoms and Early Treatment of Acute Anterior Poliomyelitis."

TENNESSEE

Personal.—Dr. Ernest W. Goodpasture, professor of pathology, Vanderbilt University School of Medicine, Nashville, received the honorary degree of master of science from Yale University, New Haven, Conn., at the annual commencement June 21.——Dr. Harry A. Sauberli, Sevierville, has been appointed health officer of the Upper Cumberland district to succeed Dr. Fray O. Pearson, Livingston, who went to Hamilton County as health officer.

New Board to Supervise State Institutions.—Governor Cooper appointed a new board of physicians June 14 to make a thorough study of the state's institutions and recommend improvements in the present system of medical care for the inmates, it is reported. Members of the board, which is to be known as the "Advisory Board of Medical Care of State's Wards," are: Drs. Hugh J. Morgan, professor of medicine, Vanderbilt University School of Medicine, Nashville; William O. Baird, Henderson, president of the Tennessee State Medical Association, and Joseph H. Francis, associate professor of surgery, University of Tennessee College of Medicine, Memphis.

TEXAS

Personal.—Dr. Minnie L. Maffett, Dallas, was elected president of the National Federation of Business and Professional Women at the annual convention in Kansas City July 14. Dr. Maffet is associate professor of gynecology at Baylor University School of Medicine and physician for women at Southern Methodist University.——Dr. Robert N. Graham, Del Rio, has been appointed health officer of Val Verde County.——Dr. Joe W. May, Donna, was elected health officer of Hidalgo County to succeed the late Dr. Drew R. Handley, Edinburg.

VIRGINIA

Society News. — Dr. John W. Devine Jr., Lynchburg, addressed the Lynchburg Academy of Medicine June 5 on peripheral vascular disease.——At a meeting of the Neuropsychiatric Society of Virginia at Virginia Beach June 14 Dr. Lawrence F. Woolley, Towson, Md., was the guest speaker on "Psychoanalytic Theory and Practice."

University Appointments. — Dr. Samuel A. Vest, associate in urology at Johns Hopkins University School of Medicine, Baltimore, has been appointed professor and head of the department of urology at the University of Virginia Department of Medicine, Charlottesville, to succeed the late Dr. John H. Neff. Dr. Edgar Wilson Kirby, formerly instructor in urology, has been named assistant professor of urology and proctology.

GENERAL

New Editor of Nutrition Journal.—George R. Cowgill, Ph.D., associate professor of physiologic chemistry, Yale University, New Haven, Conn., has been elected editor of the *Journal of Nutrition* to succeed John R. Murlin, Sc.D., Rochester, N. Y., who resigned recently. Dr. Cowgill is a member of the Council on Foods of the American Medical Association. The editorial office will be in New Haven.

Report of the Markle Foundation.—The annual report of the John and Mary R. Markle Foundation for 1938 states that the foundation is continuing its policy adopted three years ago of restricting its appropriations to support of medical research. Seventy-two grants were authorized in 1938 and eighty-four projects were in progress during the year. Fields of investigation that were aided include: ophthalmology, mental diseases, deficiency diseases, neurophysiology, disorders of the blood and of the cardiovascular system, fungous diseases, infectious diseases, rheumatoid arthritis and tuberculosis. Appropriations voted during the year amounted to $573,294. The foundation's principal account had a market value of about $14,668,000 at the end of the year.

Public Health Program at Obstetric Congress. — The preliminary program of the section on public health of the American Congress on Obstetrics and Gynecology to be held in Cleveland September 11-15 has recently been announced. The general topics for the morning sessions are: public health and maternity care; providing continuity of maternal care in the rural areas; federal and state programs in maternal care; economics and education. The afternoon topics are: the fetus and the newborn, cancer, economics and education, with a summary on the last day. Among the speakers will be:

Dr. Adrian L. Carson Jr., Richmond, Va., A Statewide Program of Prenatal Care.
Dr. Edwin F. Daily, Washington, D. C., U. S. Children's Bureau, Medical Aspects of the Maternal and Child Health Programs.
Dr. Maxwell E. Lapham, New Orleans, Postgraduate Courses in Obstetrics for Physicians.
Dr. Ernest Couture, Ottawa, Canada, The Program for Maternity Care in Canada.
Mr. Perry Addleman, Chicago, Financial Plans for Hospital Care of Obstetric Patients.
Dr. Everett D. Plass, Iowa City, A Proper Division of Obstetric Responsibility.
Dr. Alexander M. Campbell, Grand Rapids, Mich., Maternal Care and Its Economic Aspects.
Dr. William A. O'Brien, Minneapolis, Continuing Education on Maternal and Neonatal Care.

Dr. Leroy A. Wilkes, executive officer, Medical Society of New Jersey, Trenton, will present a general summary of the proceedings of the congress on the last day.

Special Society Elections.—Dr. Daniel L. Lynch, Boston, was chosen president-elect of the American Association of Industrial Physicians and Surgeons at the annual meeting in Cleveland in June, and Dr. McIver Woody, New York, was installed as president. Drs. Lloyd Noland, Fairfield, Ala., and Theodore Lyle Hazlett, Pittsburgh, are the vice presidents and Dr. Volney S. Cheney, Chicago, is secretary. The association has appointed Mr. Armour G. Park, Chicago, who has been the convention manager, as executive secretary.——Maj. Gen. Charles R. Reynolds, U. S. Army, Ret., was elected president of the Association of Military Surgeons of the United States at the recent annual meeting in Washington, D. C. Vice presidents elected were: Col. Harold D. Corbusier, Plainfield, N. J., Med. Res., U. S. Army; Dr. James A. Mattison, Los Angeles, Veterans' Administration; Capt. William L. Mann, M. C., U. S. Navy; Col. Lucius A. Salisbury, Scarsdale, N. Y., M. C., N. Y. N. G., and Dr. Warren F. Draper, U. S. Public Health Service. Maj. Gen. Harry L. Gilchrist, U. S. Army, Ret., is the secretary.——Dr. Fred W. O'Brien, Boston, was chosen president-elect of the American Radium Society at the annual meeting in St. Louis in May, and Dr. Lawrence A. Pomeroy, Cleveland, became president. Dr. William E. Costolow, Los Angeles, is secretary. Next year's meeting will be in New York.——Dr. Elizabeth Mason Hohl, Los Angeles, was chosen president-elect of the American Medical Women's Association at the annual meeting in St. Louis in May.

Report on Eugenic Sterilization.—The Human Betterment Foundation of Pasadena, Calif., reports that the number of eugenic sterilizations performed since the first sterilization

law was adopted in 1907 in Indiana up to January 1 was 30,690. This number does not include sterilization operations performed in states lacking these laws on inmates of state institutions with the consent of the patients. California has sterilized 12,941. The foundation states in its report that its studies, based on California's experience, have shown a marked decrease in sex offenses following sterilization. A study of marriages of 130 feebleminded patients after sterilization and parole showed that two thirds of them have been successful. "This is as good as the record of all California marriages," the report comments. Only about half the feebleminded who have been paroled have been sterilized, the report also points out. Of persons admitted to state hospitals for the insane, one in six of new admissions is sterilized. The operations have been divided about equally between men and women; two thirds were insane, one third feebleminded. The average number during the past two decades has been 546 per year. The Human Betterment Foundation is not designed to take up original scientific work, according to the report, but to investigate the results and possibilities for human betterment by a safe, conservative application of the discoveries made by scientists and to give the information to the public. The officers and trustees will be glad to confer with any one who is interested in the work. The headquarters are at 321 Pacific Southwest Building, Pasadena.

LATIN AMERICA

Personal.—Dr. Ricardo Nunez Portuondo has been elected president of the National Surgical Society of Havana.—— Dr. W. H. Hoffmann, Havana, Cuba, a member of the Finlay Institute, has been nominated honorary member of the Robert Koch Institute of Berlin.

FOREIGN

Award for Research on Encephalitis.—The University of Berne, Switzerland, again offers prizes for work on encephalitis lethargica which signifies real progress in the diagnosis or treatment of the disease. The smallest prize amounts to 1,000 Swiss francs. Those who wish to participate should send their applications to the Dean of the Medical Faculty of Berne, which awards the prize at the end of the year.

Deaths in Other Countries

Prof. Archibald Young, regius professor of surgery, University of Glasgow, aged 65, died, July 23.

Government Services

New Naval Medical Center

Ground-breaking ceremonies were held for the new Naval Medical Center on the Rockville Pike at Bethesda, Md., June 29. The $4,850,000 project includes a new naval hospital, medical school, dental school, quarters for personnel, nurses and hospital corpsmen and subsidiary buildings. When completed, the new center will accommodate the navy facilities now situated in Washington. Rear Admiral Perceval S. Rossiter, formerly surgeon general of the navy, turned the first spadeful of dirt in the ceremonies. Directly across the Rockville Pike from the medical center are the new National Institute of Health and the National Cancer Institute.

Henry Ford Donates Hospital Site

A new Veterans' Administration hospital has been completed at Dearborn, Mich. Erected at a cost of $1,500,000, the new 351 bed consolidated hospital and regional office is situated on a thirty-eight acre tract of land donated by Mr. and Mrs. Henry Ford. General medical and surgical patients in the Detroit metropolitan area will be cared for. Dr. Clifton H. Smith was transferred from Albuquerque, N. M., to be chief medical officer of the new station. Dr. James A. Howell, previously stationed at Excelsior Springs, Mo., will be in charge of the surgical service, and Dr. Clarence E. Bates, formerly at Wichita, Kan., will be chief of the medical service.

Dr. Frank W. Scott, transferred from Lincoln, Neb., will be the manager and chief medical officer of a new twenty-six bed hospital and regional office at Reno, Nev., which was to be opened May 15. Dr. Scott will be assisted by Dr. Ira J. Seitz, transferred from Cheyenne, Wyo.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 8, 1939.

A New Method of Keeping Milk

In the scientific journal *Nature*, J. G. Davis of the National Institute for Research in Dairying has described a new and remarkably simple method of keeping milk. It consists in adjusting the p_H of fresh milk to 5.2 with diluted hydrochloric acid and maintaining it at a temperature between 36 and 38 F. The milk may thus be kept for a fortnight or more—three or four times as long as commercial cooled pasteurized milk will keep. It may then be brought back to its original p_H by adding an equivalent amount of dilute sodium hydroxide and it is said to retain its original flavor. So far the method has been tried on only a small scale, but if it proves equally effective on a large scale it should be useful under many conditions in the milk industry.

Protein in the Treatment of Nephritis

In his Honyman-Gillespie lecture, delivered at the University of Edinburgh, Dr. J. D. S. Cameron combated the treatment of acute nephritis by protein starvation, which has been in vogue since its introduction by van Noorden in 1903. The result is that the tissue proteins are broken down without being replaced, which must produce deterioration in the general state of the body and lower its resistance to infection. The latter is serious in view of the streptococcic cause of nephritis. Moreover, the kidney is not spared the excretion of urea, which is now produced endogenously. Dr. Cameron performed experiments which showed that up to a pint of milk can be taken daily without increasing the amount of urea that the kidney is called on to excrete. He found that on a non-protein diet a subject had an average daily excretion of 6.24 Gm. of urea. The complete metabolism of a pint of milk yields only 6 Gm. of urea.

It has been shown that a high protein diet, such as the meat diet of Eskimos, has no injurious action on the kidneys. Two German physicians, Popischill and Weiss, in 1911 divided scarlet fever patients on admission to the hospital into two groups, one on the customary diet of milk and vegetables, the other on a high protein diet. No difference in the incidence of nephritis was found in the two groups. Encouraged by these observations, workers have been testing the effect of protein feeding in hemorrhagic and acute nephritis. A Scandinavian physician, Naeraa, has recently reported that examination of the urinary sediments in various forms of hemorrhagic nephritis shows nothing to suggest that a high protein diet is injurious to the kidneys. Keutmann and McCann (*J. Clin. Investigation* **11**:973 [Sept.] 1932) found that hematuria and albuminuria were not increased in acute nephritis by a high protein diet and that the return of renal function was stimulated.

Though impressed by these results, Cameron hesitated to adopt such revolutionary treatment and compromised, keeping the protein as high as was consistent with the return of kidney function. At the onset he restricted fluid intake to about 2 pints daily. Half of this is provided by fruit juice and dextrose, but 1 pint of milk is given from the beginning of the disease. The nitrogenous excretion was not increased above the endogenous level. As soon as diuresis appears, and with it diminution of the very acute signs—hematuria and blood casts—the caloric value of the diet is increased by the addition of fats and carbohydrates, but additional protein is not yet permitted. With a maximum of from 1.5 to 2 per cent in the

range of urea concentration the diet contains 50 Gm. of protein; of 2.5 per cent, up to 75 Gm.; of 3 per cent, 95 Gm.; of 3.5 per cent, 120 Gm.

Complete recovery frequently takes place in the acute stage. If not the condition passes on to the second stage, characterized by albuminuria, fall in the protein content of the blood and a tendency to edema. Until recently the massive albuminuria has been regarded as an indication for omitting protein from the diet. The result is a further fall in plasma protein, increase of the tendency to edema and lowering the resistance to infection to nothing. When 100 Gm. of protein is given daily the albumin loss is compensated and edema prevented.

Cameron concluded that there is no need to be afraid of protein at any stage of nephritis. Only at the onset of acute nephritis or in the terminal phase of chronic nephritis should protein be reduced to a minimum. It should be provided at all stages as first class protein in order to maintain the general condition. Protein starvation will kill the patient sooner than protein excess.

The Decline of Population

Though the approaching decline of our population has been announced for years by statisticians, this grave prospect has only recently become a burning question. In the House of Lords Lord Samuel said that the number of live births per thousand of women of the child-bearing age in 1891 was 129.8 but that at the census of 1931 it had fallen to 64.3, almost precisely one half. This unprecedented change had taken place not over centuries but in a single generation. There were counterbalancing changes in the death rate, particularly the infantile death rate, and in change from emigration to immigration, but they far from equaled the decline in the birth rate. It was estimated that if the present trend continued the population of England and Wales would by 1970 have fallen from 41 to 30 million and by the end of the century would be only 20 million, and of that number nearly one half would be persons over 60. The means of the decline was contraception, but the cause was economic—poverty or the fear of poverty and the desire to do the best for the children who already had arrived, the desire for enjoyment and to avoid the burden on mothers and the fear of war. As remedies Lord Samuel suggested family allowances and increase of the income tax relief for wives and children.

Lord Dawson said that contraception was extending to all classes and all creeds but that is was not due to a double dose of original sin but to the evolution of life. It was only a specialized example of man's gradual control of nature. The large families of former periods involved a terrible wastage of life, which only rendered the high birth rate possible. Contraception had to grow into our social fabric because of the changed conditions of the people and the reduction of infant mortality. The mothers of today had never been beaten in the training of children. Lord Dawson also recommended family allowances.

For the government Lord Templemore deprecated relying too much on the calculations of eminent statisticians. Some of the forecasts anticipated an earlier decline of population than the facts appeared to justify. For the first time since 1873 the birth rate began to rise in 1934 and this tendency had continued unbroken. This might be the beginning of a reversal of a long continued movement. As to family allowances, in the countries which had adopted them they did not show a significant relation with the changes in the birth rate. In England the change occurred without any artificial stimulus. The pessimistic forecasts were based on a continuance of the fall. It was unlikely that the present population would fall below the present 46 million for two or three decades.

Logan Turner

The death of Dr. A. Logan Turner has removed a prominent laryngologist. The son of Sir William Turner, who was distinguished as an anatomist and educationist, he was born in Edinburgh in 1865. He graduated from the university in 1889 and intended to practice general surgery, but an injury to the hand prevented him from doing this and he took up the special work of diseases of the ear, nose and throat. In the course of a long career he received many distinctions. He was president of the Royal College of Surgeons of Edinburgh in 1925, president of the Sections of Laryngology of the Royal Society of Medicine, honorary member of the American Medical Association, honorary fellow of the American Laryngological, Rhinological and Otological Society and corresponding fellow of the American Laryngological Association. His contributions to medical literature were of the first importance, including "Skiagraphy of the Accessory Nasal Sinuses," "Intracranial Pyogenic Disease" and a biography of his father entitled "Sir William Turner: A Chapter in Medical History." He was editor of a "Manual of Diseases of the Nose, Throat and Ear," which went through several editions, and joint editor from 1921 to 1929 of the *Journal of Laryngology and Otology*.

Teatment of Sterility with Vitamin E

The Department of Chemistry of the University of Witwaterstrand, South Africa, in collaboration with gynecologists and the Faculty of Veterinary Science at Onderspoort Laboratory, has been experimenting for eighteen months in the treatment of sterility in human beings and in the lower animals. It now announces that the results obtained from vitamin E, derived from wheat oil, have been so satisfactory that further systematic tests, medical and veterinary, are to be undertaken. An early difficulty was the tendency of vitamin E to decompose, but this was overcome and a sample six months old proved effective.

BERLIN

(From Our Regular Correspondent)

June 29, 1939.

Manganese (Dust) Poisoning

Prof. Ernst W. Baader of Berlin, specialist in industrial diseases, spoke in detail recently before the Medizinische Gesellschaft in Münster, Westphalia, on manganese (dust) poisoning. Manganese is widely used in hardening steel, in ceramics and glass making, in making linoleum, paint and enamel, in the marbling of soap, in chemistry and in the manufacture of dry batteries. Disturbances of health caused by manganese have been accurately described and observed since 1901. Most laborers working with manganese dioxide get sick within the first two years, although cases of manganese poisoning have been observed after from four to five months or even after twenty years of work. The early symptoms are a feeling of heaviness in the legs, uncertainty in turning rapidly and great need of sleep. The fully developed symptoms are a masklike face, periods of uncontrollable weeping or laughter, stuttering, micrography, a characteristic "stilt-walk," stepping on the outer edge of the foot, muscular rigidity and disturbances of equilibrium, so that patients can be thrown over with the lightest touch of the forefinger. The basal ganglions, especially the corpus striatum and pallidum, are regarded as the seat of the disease. Baader takes for granted also a central exophthalmic goiter due to injury of the thalamencephalon. In some cases there is also an initial fever. With better diagnostic methods, many more cases of manganese poisoning may be found; many cases of manganese poisoning are regarded as cases of parkinsonism of unknown etiology. Inhaled manganese dioxide dust may cause pneumonia, as numerous observations indicate.

Purine Metabolism in Gout

Dr. Kühnau, head of the Balneologisches Institut in Wiesbaden, read a paper on purine metabolism in gout and how it is influenced by vitamin B_1 before the Medizinische Gesellschaft in Frankfort on the Main. The etiology of gout is still incompletely explored. There are two opposing theories. One places the primary disturbance in the kidneys and explains hyperuricemia through impairment of uric acid secretion; representatives of this point of view are Ebstein, Thannhauser and Labbé; the other theory assumes an increased production of uric acid. There are reliable methods to determine nucleotide-N in the blood. Kühnau recently made comparative nucleotide determinations on a large number of persons with normal metabolism and with gout and proved without exception that in real gout the nucleotide level in the blood is increased (from 5 to 10 mg. per hundred cubic centimeters of nucleotide-N as against the normal 2 to 4 mg.) and that nearly in proportion with the uric acid level. Thus in gout, besides uric acid, also its phosphorus containing precursors the nucleotides circulate in increased quantities in the blood. Birch and Mapson observed an increase of nucleotides in the blood also in beriberi; Lecoq was able to produce beriberi in normally fed pigeons through administration of uric acid. It was obvious therefore to assume connections between a decrease in purine and the action of vitamin B_1. In gout the formation of purine bodies is increased to such an extent that the normal vitamin B_1 content of the cells is insufficient to carry through the normal channels the decrease in purine; this can be recognized through increased appearance of inorganic phosphate and uric acid. An increased supply of vitamin B_1 is able to suppress considerably this disturbance. The therapeutic results obtained in gout by the use of vitamin B_1 correspond to this assumption especially in acute attacks; intravenous injections of from 10 to 20 mg. of vitamin B_1 were followed in most cases by sudden disappearance of pains, swelling and redness.

New Causes of Pneumoconiosis

In the course of an expedition to Tanganyika in 1938 two new phases of industrial activity were observed with serious danger of injury to natives through pneumoconiosis. Dr. R. Lehmensick made a report on this subject in the *Medizinische Gesellschaft* in Bonn. In the preparation of sisal the native brushes hemp on brushing machines, forming great clouds of dust consisting of small hemp fibrils and earth dust from the plants; this dust covers the worker like a layer of flour. Although they have been using these brushing machines for only a short while, tuberculosis among the workers has already been observed. It has been estimated that a worker can endure the work for from seven to eight years at most in such shops. The so-called blow-off process in gold mining, such as is practiced in the Lupa region, presents also the danger of pneumoconiosis. In this process earth containing gold is thrown on sifting machines; the earth is blown off next by a strong current of air, which however leaves behind the heavier bits of earth containing gold. Dust created through this process is so thick that one can hardly see. Since the process has been in use for only a short time, disease attacks have not been observed as yet.

Experience in Combating Scoliosis

Prof. Franz Schede, orthopedist, of Leipzig recently made known his experiences in combating scoliosis before the medical society of that city. After he discovered that a developed genuine scoliosis could not be cured with the means available, Schede tried to influence incipient scoliosis in the nursling and the small child. He found that at this stage of development the deformed vertebra could be forced to grow straight again by means of resetting and recumbency, a treatment which lasted from four to six months. In this way he effected a permanent cure in about thirty cases. In the developed scoliosis of the school child, attention was concentrated on preventing at least a deterioration of the condition. To this end there were necessary (1) the strength of one's own sincere efforts, (2) the regular medical control of all cases of scoliosis with objective methods of measurement, (3) complete easing of all patients with progressive scoliosis for at least a quarter of a year, combined with resetting, recumbency, extension and lying in the open air and (4) the performance of school duties by these children during stationary treatment. To carry out these measures successfully Professor Schede developed an organization which has been functioning satisfactorily for fifteen years. The evaluation of the results has shown puberty to be the most dangerous period for these patients. His observations also confirmed the fact that the prognosis of a case of scoliosis is all the more difficult, the more severe the curvature has become. While patients of grade 1 showed an improvement in 8.6 per cent and neither progress nor regress in 79.7 per cent of the cases to the close of puberty, no improvements at all were noted in grade 3 and only a 14.3 per cent unchanged condition—a further indication of the importance of the early recognition and treatment of this disease.

Progress of Serial X-Ray Examinations

Serial x-ray examinations show considerable progress in Germany. Professor Holfelder of the University of Frankfort has just reported that the x-ray squads of the SS (protective guards of the party) in Frankfort, placed under his direction, will take serial roentgenograms of the entire population of Mecklenburg. About 900,000 pictures will be taken; they will be worked up at the roentgen institute of the University of Frankfort on the Main. Mecklenburg will have thereby, as first national socialist district, a comprehensive "x-ray register" of its population. For this purpose the number of x-ray squads in Frankfort is to be raised from four to twenty.

THE NETHERLANDS

(From Our Regular Correspondent)

July 1, 1939.

Protection Against Aerial Attacks

An institute has recently been organized in Amsterdam for instructing the civil population in methods of protection from attacks from the air. The purpose is to make known all the measures to be taken for the protection of Amsterdam and its population as well as that of other cities. Dr. M. L. Van der Stempel is the director. The instructors will be chosen from among professors, physicians, police inspectors, engineers and chemists. Five courses have been planned for the different classes of pupils. The courses are given every other day to the members of the League of the Nation's Youth. Plans for the erection in Amsterdam of a central school of air protection for the Netherlands have advanced to the point that they can be carried out as soon as the law concerning air protection has been worked out. The following subjects will be treated: 1. History and development of aerial warfare: rights of peoples with reference to it; influence of the League of Nations and the danger of war for the Netherlands and particularly for Amsterdam. 2. Methods of air attack; information on explosives and on incendiary, gas and disease-germ bombs. 3. Chemical warfare. 4. Protection of the individual. 5. Protection of the population. 6. Preparation in times of peace. 7. First aid; care of the sick, wounded and gassed before and after air attacks. 8. Handling of face masks, with practical exercises for the population. 9. Discussion of the division of Amsterdam into sections and quarters and protection of the vital parts of the city. 10. Instruction in first aid in case of accident. 11. Construction and use of oxygen apparatus. 12. Practical exercises in the use of the gas chamber.

Consumption of Raw Milk

In the *Tegen de Tuberculose* review there appeared a study on the use of raw milk in the Netherlands. The growing significance of the tubercle bacillus in cows as causative of tuberculosis in human beings has bred a distrust of raw milk. Therefore the inquiry which Dr. G. D. Hemmes has just ordered made in the province of Utrecht with reference to raw milk consumption is of current interest. Of sixty-five visiting nurses in districts of at least 11,000 inhabitants, fifty-one cooperated in the inquiry. In localities comprising a total of 138,154 inhabitants, 14,015 families were questioned. The source of the milk was likewise indicated. Information was gathered from one tenth of the rural population as to the habitual use of raw milk. Tabulations show that in the province of Utrecht from 10 to 23 per cent of the persons questioned regularly drank raw milk. More than 50 per cent of the consumers drink milk from their own animals.

Combating Favus in the Schools

The question of favus infection and the measures to be taken in the schools have been studied by Drs. H. W. Diemens and A. J. M. Krens. They point out that the campaign against favus requires instruction not only of the physicians and the population but also of the governing boards of districts (communes) and the school inspectors and commissaries, since these are in a position, according to the law, to seek out and care for pupils infected by flavus. It is necessary that they exercise care over the appointment of physicians in all the schools of the Netherlands (these are found at present in only 25 per cent of the schools) and over the organization of a service which will bring to all districts where favus infection is found bandages completely protecting the heads of the children and providing them with a statement attesting that they are regularly treated by a physician. These measures of protection now exist in only 4 per cent of the 1,070 Netherland districts. To reach children that no longer attend school, it is necessary to prohibit any one from employing them in places where they might infect other persons and to have them watched by the police.

Examination of Rotterdam School Children

M. Feisser, director of the public health department of Rotterdam, has issued an interesting report on health examinations of Rotterdam school children during 1935, 1936 and 1937 with special reference to unemployment. He defines the word "undernourished." One can be undernourished while eating sufficient food. Twelve thousand children attending sixty schools were examined. They were both measured and weighed in 1935 and then divided into groups according to the length of time of unemployment of their fathers (from three to thirty-six months). Little difference was observed between the different groups. The children of unemployed fathers were slightly smaller and lighter in weight than those of employed fathers. In the same way laborers were examined who were previously unemployed but now engaged by the city, and persons previously never unemployed but now holding municipal jobs. The difference in stature is the same as for the children. The unemployed are smaller.

Tuberculosis Research

An institute will shortly be created charged with conducting research in medical hygiene. Research activities on pulmonary tuberculosis will be primarily considered. These have been carried on in increasing measure within the last few years both for collective and for individual profit. The aim of this institute will be to organize and centralize research studies. The erection and maintenance of this institute is made possible by the cooperation of different societies and foundations as well as of placement bureaus and promoting companies. The state will take part in it but only through the department of instruction, arts and sciences by way of visits of school representatives and through the department of social affairs. An initial capitalization of about 50,000 florins will be credited to the department of social affairs for antituberculosis work. There will probably be no other subsidies.

BUDAPEST

(From Our Regular Correspondent)

June 15, 1939.

The Medical Profession in Hungary

In Budapest the proportion of physicians to the population is 1:370. The total number of physicians is 2,697, of whom 291 are women, 10.6 per cent. The majority of the physicians are between 30 and 35 years of age. As to religion, 1,013 are Roman Catholics, 281 Protestants, 204 Evangelists and 1,137 Jews. According to these figures the percentage of Jewish physicians is 41, while that of the Christians is 59. Of all physicians, 39 per cent are unmarried; 602 physicians (36.7 per cent) have no children, 500 (31.5 per cent) have one child, 344 (21 per cent) have two children, 126 (7.5 per cent) have three children, thirty-seven (2.3 per cent) have four children and twenty-two (1.2 per cent) five children. Four fifths of all physicians practicing in Budapest are specialists and only 20 per cent are general practitioners. Ninety-four per cent of all physicians speak and write German, 33 per cent French, 29 per cent English, 6.6 Italian and 1 per cent Russian. Of all Budapest physicians only 112 own a house, while 2,285 live as tenants and pay rent. Only 57 per cent of all physicians have their own household and 850 of them keep no servants; 25.4 per cent of all doctors get monetary support from their parents or relatives. Permanent occupations are carried on by 10.7 per cent of all consorts. One fifth of all physicians do not own those instruments which are necessary for continuing medical practice. Nine hundred physicians have no telephone, and 17 per cent of all doctors do not subscribe to any journal.

Marriages

JOHN ANDERSON BRABSON, Greenville, Tenn., to Miss Julia Elizabeth McLaurin at Lancaster, S. C., June 24.

WILLIAM MARSHALL BENNETT, Ruffin, S. C., to Miss Evelyn Tallulah Martin of Asheville, N. C., July 6.

ROBERT U. COOPER, Washington, D. C., to Miss Carrye Leonora Johnson in Manchester, Ga., June 1.

DAVID ALEXANDER YOUNG, Raleigh, N. C., to Miss Alma Page Stanley of Belmont, Mass., May 6.

LOUIS GOODWIN SIMON, South Norwalk, Conn., to Miss Elizabeth Abram of New York, July 8.

WILLIAM HEATH BALL, Panama City, Fla., to Miss Mercedes Clarke of Dothan, Ala., May 15.

MARION GRIER FISHER to DR. MARY CHRISTINE GATEWOOD, both of McConnellsville, Ohio, in June.

HUGH M. MOORHEAD to Miss Margaret Krimmel, both of Erie, Pa., in Philadelphia, April 14.

ROYAL W. WALTERS to Miss Elizabeth Stockton Clark, both of Battle Creek, Mich., June 18.

MAURICE J. STONE, Carbondale, Pa., to Miss Dorothy E. Yoffee of Harrisburg, June 25.

SAMUEL F. COHEN, Norristown, Pa., to Miss Roslyn H. Weil of Philadelphia, April 19.

ALLYN BLYTHE CHOATE to Miss Sarah Glover, both of Charlotte, N. C., June 10.

JOHN LESLIE REIGER, Craig, Colo., to Miss Eloise Baldwin of Langer, Wyo., June 26.

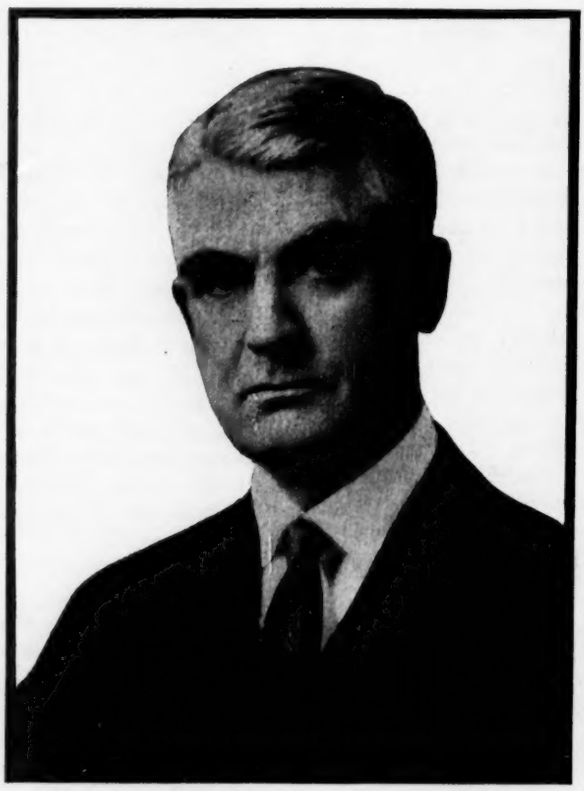
WILLIAM HENRY KAUFMAN to Miss Beth Pearse, both of Durham, N. C., May 27.

REESE CLINTON COLEMAN JR. to Miss Louise Kennedy, both of Atlanta, Ga., in June.

Deaths

Dr. William J. Mayo, ⊕ former President of the American Medical Association, recognized throughout the world as a brilliant surgeon, a great organizer, an esteemed leader in the field of medicine, died at his home in Rochester, Minn., July 28, aged 78; an operation for perforating ulcer of the stomach had been performed April 22. But a few months have passed since the death of the younger of the two brothers, Dr. Charles H. Mayo. Their careers were inseparable. Their passing from this life so closely together was no doubt as they themselves might have wished it.

The career of Dr. William J. Mayo will be fully recorded in many biographies in which space will be available for proper consideration of its many facets. Since the sixteenth century, the Mayo family has been one closely associated with science. The father of the two boys, Dr. William Worrall Mayo, was born in Manchester, England, May 31, 1819; after training as a physicist and chemist he came to the United States in 1845. In 1847 he removed to Lafayette, Ind., where he studied medicine with Dr. Eleazar Deming. He then completed his medical studies in the University of Missouri and graduated in 1854. After practicing briefly in Laporte, Ind., Dr. William Worrall Mayo removed to Minnesota, settling eventually in Rochester in 1863, where he was in charge of the draft board during the Civil War. The father of these boys was himself a competent surgeon, one of the first physicians in the West to use the microscope, founder of the Minnesota State Medical Association and its president in 1873. Dr. William Worrall Mayo died in Rochester in 1911. He and Mrs. William Worrall Mayo had three daughters and two sons.



WILLIAM JAMES MAYO, M.D., 1861-1939

The elder son, William James Mayo, was born in LeSueur, Minn., June 29, 1861. The family removed to Rochester when he was slightly over 1½ years old. The boy attended the public school in Rochester and the high school and thereafter spent one year in a private school for languages and science and two years in Nile's academy. During their youth, both William and Charles accompanied their father on his rounds and had an opportunity to observe both surgical operations and postmortem examinations. For a time, both clerked in the drug store. With their father they learned to use the microscope. In 1880, William J. Mayo went to the University of Michigan, Ann Arbor, and completed a three year course which had just been established to replace the former two year medical course. In his medical education Dr. William J. Mayo had an opportunity to be associated with the anatomist Ford and with Victor C. Vaughan, and his training in surgery was under Donald McLean, then professor of surgery. When he was 22, Dr. William J. Mayo completed his medical studies in the university and received his degree.

In November 1884, one year later, Dr. Will married Miss Hattie M. Damon of Rochester. Through many years the close association of Mrs. Mayo with Dr. William J. Mayo in extending hospitality, in the organization of many aspects of the clinic and in carrying a great share of the responsibility for his success and happiness has been widely recognized.

In 1884, Dr. William J. Mayo spent two months in New York City taking the first course given in the New York Post-Graduate School. In 1885 he took a course in the New York Polyclinic. For many years he and Dr. Charles alternated in spending week-ends in Chicago with Christian Fenger. Frequently they traveled abroad to observe surgery as practiced in every nation in the world.

In 1885, Dr. William J. Mayo read his first paper before the Southern Minnesota Medical Association, and his literary contributions to every phase of medical science and art and practice have been innumerable.

From 1889 until 1905, the Drs. Mayo carried on their work in St. Mary's Hospital in Rochester, an institution which they, with their father, had aided in establishing and one which is now known throughout the world largely because of their work. The records of surgical procedures performed indicate an early tendency toward selection of abdominal surgery by Dr. Will, leaving many of the other fields to Dr. Charles. As Dr. Will himself said, "Charlie soon had me driven to cover by being a better surgeon, and I began to specialize in abdominal work and in operations on the ureters and kidneys." As the repute of their work spread, they soon began to associate with themselves younger men who had shown special predilection for surgical work, the first to be selected being Dr. E. Starr Judd, who had charge of the third operating room in 1905. From that time on, the surgical developments in Rochester were so rapid that additional wings continued to be added to the hospital, an annex was opened and additional hospitals were built. As it became apparent that internal medicine and diagnosis, with the work of the laboratory, would be of prime importance, these developments were particularly encouraged. Throughout the record of the growth and development of this monumental institution to the proud position which it now occupies signs of the leadership of Dr. William J. Mayo appear again and again. Early in his career Dr. Will conceived the idea of a permanent endowed institution in Rochester to be connected with a university. He elaborated the concept of the Mayo Foundation and he gave freely of himself, of his funds and of his life for its perpetuation.

The honors and recognitions given to him indicate how widely recognized were his achievements for the good of mankind. He was a fellow of the American Surgical Association, of the Royal College of Surgeons and of the College of Physicians of Philadelphia. He received the honorary LL.D. from the universities of Toronto, Maryland, Pennsylvania, McGill, Leeds, Pittsburgh, Carleton, Manchester, Temple and Aberdeen. He received the honorary degree of D.Sc. from Michigan, Columbia, Leeds, Harvard, Marquette and Northwestern universities. He received the honorary M.D. from Trinity College in Dublin and from the University of Havana. He was also a fellow of the Royal College of Surgeons, Ireland, of the Royal Accademia Medica di Roma, of the Royal Society of Medicine of England, of the Royal Australasian College of Surgeons, of the Académie de médecine de France. Other recognitions include the gold medal of the National Institute of Social Sciences; the Distinguished Service Medal of the United States Army; the Henry Jacob Bigelow gold medal of the Boston Surgical Society; Royal Order of the Commander of the Northern Star, conferred by His Majesty the King of Sweden; the Finlay Congressional Distinguished Service Medal, conferred by Cuba; the cross of the Royal Order of Knight Commander of the Crown of Italy and the citation for distinguished service given by the American Legion with a commemorative plaque, which was presented by the President of the United States in person in 1934.

Dr. William J. Mayo became associated early with medical organizations. He served as president of his county and state medical associations. He was chairman of the Section on Surgery and Anatomy of the American Medical Association, 1898-1899, and President of the American Medical Association, 1906-1907. He was also president of the American Surgical Association, of the American College of Surgeons, of the Con-

gress of American Physicians and Surgeons, and of the Inter-State Postgraduate Medical Association of North America.

During the World War he was commissioned Major in the Medical Reserve Corps on April 9, 1917, and Colonel of the Medical Corps of the National Army on June 15, 1918. He served as chief consultant for all surgical services during the period of the war and was stationed in the office of the Surgeon-General in Washington. He was commissioned Brigadier-General in the Reserve Corps in 1921 and since then has served at various times as consultant in surgery to the War Department.

His memberships in medical organizations, in military organizations and in civic bodies were far too numerous even for listing. Most of the important foreign medical societies of the world had elected him an honorary member.

His contributions to medical literature, previously mentioned, were well beyond 300 in number, beginning with a report of an operation for ovarian tumor and covering many phases of medical and surgical science, a wide variety of commencement and honorary addresses, a number of descriptive letters of travel and philosophic contributions to the problems of our day.

In 1915, Drs. William J. and Charles H. Mayo donated $1,500,000 to establish the Mayo Foundation for Medical Education and Research in Rochester in affiliation with the University of Minnesota. In 1919 the brothers formed the Mayo Properties Association to hold all the properties, endowments and funds of the Mayo Clinic to insure the permanence of the institution for public service. Again in 1934 the Mayo Properties Association presented a gift of $500,000 to the University of Minnesota, making a total of $2,800,000 that the brothers had given to the Mayo Foundation. In sending this contribution, Dr. William J. Mayo wrote, in part:

> "Our father recognized certain definite social obligations. He believed that any man who had better opportunity than others; greater strength of mind, body, or character, owed something to those who had not been so provided; that is, that the important thing in life was not to accomplish for oneself alone, but for each to carry his share of collective responsibility. . . . The fund which we had built up and which had grown far beyond our expectations had come from the sick, and we believed that it ought to return to the sick in the form of advanced medical education, which would develop better-trained physicians, and to research to reduce the amount of sickness. . . . The people's money, of which we have been the moral custodians, is being irrevocably returned to the people from whom it came. . . . The practice of medicine in Rochester is carried on in the same manner as by other members of the regular medical profession throughout the state and nation. All classes of patients, without regard to race or creed, social or financial standing, receive necessary care without discrimination. . . ."

These words reflect the great character, the human kindliness, the profound human sympathy that were the part of Dr. William James Mayo. It has been said that opportunity and great occasions make great men. Exception to this rule is present in the lives of Drs. William J. and Charles H. Mayo. They made a small village into one of the most notable medical centers of the world wholly through a genius for surgery and for medical leadership. Throughout their careers they devoted themselves to the advancement of scientific medicine and of the medical profession which they served so nobly and which gloried so greatly in their achievements.

In 1906, when Dr. William J. Mayo read his presidential address to the American Medical Association, he forecast and considered some of the great problems that concern medical practice today. He attacked abuses of medical care by public service corporations and the abuse of medical charity by those able to pay. He condemned all attempts by those not trained in the science and art of medicine to dominate its functions. To the very end he contended for this point of view. And in a note written just a few days before his death, he urged continued work for the advancement and stabilization of medical science and the traditions of medical practice.

All the world pauses in the midst of its turmoil and stress to give him honor and to pay him in his death the tribute that is so justly his due—a great physician, a superb surgeon, a magnificent leader, a beloved man!

Arthur Thornton Legg ✠ Boston; Harvard University Medical School, Boston, 1900; member of the House of Delegates of the American Medical Association in 1936 and vice chairman of the Section on Orthopedic Surgery, 1934-1936; instructor in orthopedic surgery, 1917 to 1931, in which year he was appointed assistant professor of orthopedic surgery at his alma mater and was also at the graduate school; member of the American Orthopedic Association, American Academy of Orthopedic Surgeons and the New England Pediatric Society; fellow of the American College of Surgeons; associate surgeon, Children's Hospital, Boston; consulting orthopedic surgeon, Lowell General and St. Joseph's Hospital, Lowell, Mass., and Chelsea (Mass.) Memorial Hospital; clinical consultant to the Haverhill Clinic for Crippled Children; orthopedic surgeon to the Lakeville State Sanatorium, Middleboro; in 1910 described a disease of the hip (osteochondritis deformans juvenilis), which is sometimes designated as Legg-Perthes' disease; since 1916 a member of the Harvard Infantile Paralysis Commission; aged 65; died, July 8, of heart disease.

John Allen Hornsby, Washington, D. C.; St. Louis Medical College, 1880; superintendent of the Michael Reese Hospital, Chicago, 1907-1914; formerly professor of medicine at the University of Virginia Department of Medicine, Charlottesville; at one time superintendent of the University of Virginia Hospital, Charlottesville; served as coroner of St. Louis County, as surgeon of the White Pass and Yukon Railway, Alaska, as a special quarantine officer in Nome, Alaska, and as a medical officer of the U. S. Treasury Department at Nome; during the World War was a confidential adviser to Secretary of War Newton D. Baker and was made chief inspector of military hospitals in the United States and chief of the hospital construction division of the army; co-founder and first editor of *Modern Hospital;* aged 77; died, June 4.

Charles Louis Billard ✠ Washington, D. C.; University of Pennsylvania Department of Medicine, Philadelphia, 1904; formerly instructor in clinical ophthalmology at Georgetown University School of Medicine and George Washington University School of Medicine; member of the staffs of the Episcopal Eye, Ear and Throat Hospital and Children's Hospital, and formerly a staff member of the Providence and Gallinger hospitals; at one time visiting ophthalmologist at St. Elizabeth's Hospital; aged 60; died, May 1, in the Garfield Hospital of cerebral hemorrhage, hypertensive heart disease and arteriosclerosis.

Ebenezer Ross Faulkner ✠ New York; Halifax Medical College, Halifax, N. S., Canada, 1901; L.R.C.P., London, England, and M.R.C.S., England, 1905 and F.R.C.S., England, 1907; member of the American Laryngological Association and the American Laryngological, Rhinological and Otological Society; a member of the faculty of the New York Polyclinic Medical School and Hospital in the department of rhinolaryngology from 1922 to 1925; on the staff of the Manhattan Eye, Ear and Throat Hospital; aged 63; died, May 29, of coronary thrombosis.

Myron Ellis Kahn, Chicago; University of Illinois College of Medicine, Chicago, 1915; member of the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; served during the World War; on the staffs of the Michael Reese and Sarah Morris hospitals and the Winfield (Ill.) Sanatorium; aged 47; died, May 25.

Robert L. Felts ✠ Durham, N. C.; University of Maryland School of Medicine, Baltimore, 1898; fellow of the American College of Physicians; formerly secretary of the Durham County Board of Health; on the staffs of the Watts Hospital and the Duke Hospital; aged 68; died, May 27, of coronary heart disease.

William R. Clinton ✠ Detroit; Detroit College of Medicine, 1911; assistant professor of clinical medicine at his alma mater; fellow of the American College of Surgeons; on the staff of the Harper Hospital; served during the World War; aged 49; died, May 29, of pulmonary emboli and diabetes mellitus.

William Hutchinson ✠ Pueblo, Colo.; Denver and Gross College of Medicine, Denver, 1904; past president of the Las Animas County Medical Society; superintendent of the Colorado Fuel and Iron Corporation Dispensary; aged 59; died, May 17, in the Corwin Hospital, of coronary thrombosis.

David A. Jamieson, Arcadia, Mich.; Detroit College of Medicine, 1894; member of the Michigan State Medical Society; president of the Manistee County Medical Society; for many years member of the school board; aged 73; died, May 12, of acute dilatation of the heart.

John Henry Cumming, Superior, Wis.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1902; member of the State Medical Society of Wisconsin; aged 67; died, May 1, in St. Mary's Hospital, of pneumococcic meningitis following otitis media.

Edward Bremner Chandler, Montreal, Que., Canada; McGill University Faculty of Medicine, Montreal, 1921; since 1928 demonstrator in surgery at his alma mater; on the staff of the Montreal General Hospital; aged 42; died May 12, of rheumatic heart disease.

Henry S. Brookes ✠ St. Louis; St. Louis Medical College, 1884; clinical lecturer on medicine from 1900 to 1906 and clinical professor of medicine from 1906 to 1911 at the Washington University School of Medicine; aged 80; died, May 16, of coronary thrombosis.

Robert Malcom Heath ✠ Pittsburgh; Illinois Medical College, Chicago, 1910; formerly on the staff of St. Joseph's Hospital; aged 61; died, April 24, of bronchopneumonia following a compound fracture of the left tibia received when struck by a truck.

A. Lovelle Burdick, Janesville, Wis.; Hahnemann Medical College and Hospital, Chicago, 1893; member of the board of trustees of the Milton (Wis.) College; on the staff of the Mercy Hospital; aged 73; died, April 21, of myocarditis and arteriosclerosis.

Lucius Walter Holloman, Marksville, La.; University of Tennessee College of Medicine, Memphis, 1913; member of the Louisiana State Medical Society; director of the Avoyelles parish health unit; aged 49; died suddenly, May 19, of coronary occlusion.

Chauncey E. Ehle, Quincy, Ill.; Northwestern University Medical School, Chicago, 1895; member of the Illinois State Medical Society; superintendent of the Illinois Soldiers' and Sailors' Home and Hospital; died, May 23, in the Blessing Hospital.

Simeon Xavier Cordonnier ✠ Carthage, Mo.; Vanderbilt University School of Medicine, Nashville, Tenn., 1901; for many years bank president of Avilla; on the staff of the McCune-Brooks Hospital; aged 66; died, May 16, of heart disease.

Samuel Jacob Gold, Peabody, Mass.; Boston University School of Medicine, 1937; on the staff of the Seaview Hospital, Staten Island, N. Y.; aged 27; died, May 28, in Jersey City, N. J., of injuries received when struck by an automobile.

William Johnson Callaway, Florence, Ala.; Birmingham Medical College, 1903; member of the Medical Association of the State of Alabama; on the staff of the Eliza Coffee Memorial Hospital; aged 60; died, May 20, of chronic myocarditis.

Samuel King Davis ✠ Libertyville, Iowa; College of Physicians and Surgeons, Keokuk, Iowa, 1888; formerly secretary of the Jefferson County Medical Society; president of the local school board; aged 76; died, May 28, of coronary occlusion.

Clarence Herbert Belknap ✠ Detroit; Detroit College of Medicine, 1916; on the staff of the Grace Hospital; aged 47; died, May 4, in the City of Detroit Receiving Hospital (Redford Branch) of injuries received in an automobile accident.

Henry Scott Ware Hardwicke, New York; Hahnemann Medical College and Hospital of Philadelphia, 1905; served during the World War; aged 56; died, May 11, in the Lenox Hill Hospital of chronic cholelithiasis and pancreatitis.

Ephraim J. Burkhart, Johnstown, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1897; member of the Medical Society of the State of Pennsylvania; aged 75; died, April 18, of coronary sclerosis.

Samuel A. Boland, Loganville, Ga.; Chattanooga (Tenn.) Medical College, 1896; member of the Medical Association of Georgia; aged 66; died, May 24, in a hospital at Atlanta of cardiorenal vascular disease.

Herbert Custer Jones, Little Rock, Ark.; Kansas City College of Medicine and Surgery, Kansas City, Mo., 1922; aged 48; died, May 18, as the result of hanging himself and a self-inflicted bullet wound.

John Berry, Southern Pines, N. C.; Jefferson Medical College of Philadelphia, 1908; served during the World War; aged 54; died, May 25, of coronary thrombosis, arteriosclerosis and hemorrhagic nephritis.

Jeffrey Neese Elder, Hopewell, Va.; Medical College of Virginia, Richmond, 1913; member of the Medical Society of Virginia; served during the World War; aged 49; died, May 11, in Perry Point, Md.

James Arthur Devine, Monte Carlo, Monaco, France; University of Dublin School of Physic, Trinity College, Dublin, Ireland, 1897; aged 70; died, May 12, of heart disease and cerebral hemorrhage.

Eugene C. Brown, Hawkinsville, Ga.; Atlanta College of Physicians and Surgeons, 1900; member of the Medical Association of Georgia; aged 60; died, May 10, of a self-inflicted bullet wound.

Edward Joseph Callow, Seattle; University of Oregon Medical School, Portland, 1930; member of the Washington State Medical Association; aged 56; died, May 1, of chronic nephritis.

Bertha Lund Glaeser, Cincinnati; Woman's Medical College of Cincinnati, 1889; member of the Ohio State Medical Association; aged 78; died, May 5, in the Good Samaritan Hospital.

Earl Elliott Cress, Boyd, Minn.; Northwestern University Medical School, Chicago, 1910; member of the Minnesota State Medical Association; aged 54; died May 14, of coronary sclerosis.

Paul Cole Ridpath, Spokane, Wash.; Jefferson Medical College of Philadelphia, 1900; served during the World War; aged 63; died, April 19, in St. Luke's Hospital of diabetes mellitus.

Waldo Richardson, Los Angeles; Jefferson Medical College of Philadelphia, 1909; served during the World War; aged 62; died, April 20, in St. Vincent's Hospital of carcinoma of the prostate.

Cicero Maxwell Heavrin, Hawesville, Ky.; Kentucky School of Medicine, Louisville, 1888; member of the Kentucky State Medical Association; aged 78; died, May 27, of angina pectoris.

Benjamin Franklin Brooks, Mount Vernon, Wash.; University of Oregon Medical School, Portland, 1901; county health officer; aged 61; died, May 31, of a self-inflicted bullet wound.

Fred K. Day, Longton, Kan.; University Medical College of Kansas City, Mo., 1897; member of the Kansas Medical Society; aged 72; died, May 16, in St. Mary's Hospital, Winfield.

Gainor Jennings, West Milton, Ohio; Cincinnati College of Medicine and Surgery, 1883; formerly member of the school board and postmaster; aged 78; died, May 15, in Miami, Fla.

Erle Walker Hillsman ✠ Trezevant, Tenn.; Vanderbilt University School of Medicine, Nashville, 1900; chairman of the school board; aged 61; died, May 8, of angina pectoris.

Robert Walter Geddes, Montreal, Que., Canada; McGill University Faculty of Medicine, Montreal, 1905; aged 63; died, May 7, in the Royal Victoria Hospital, of angina pectoris.

Louis Marquis Bunnell, Nicholson, Pa.; Cleveland Homeopathic Medical College, 1899; aged 64; died, April 7, in the Moses Taylor Hospital, Scranton, of bronchopneumonia.

Lawrence A. Ford, Tupelo, Miss.; College of Physicians and Surgeons, Memphis, Tenn., 1907; county sheriff; aged 60; died in May at the Community Hospital of pneumonia.

Alvin Henry Carr ✠ Wyoming, Ohio; Medical College of Ohio, Cincinnati, 1901; served during the World War; aged 68; died, May 22, in the Bethesda Hospital, Cincinnati.

William Franklin McGriff, Niceville, Fla.; University of Alabama School of Medicine, University, 1910; aged 62; was found dead, May 17, of a self-inflicted bullet wound.

Rodney Melvin Arey, Muscatine, Iowa; State University of Iowa College of Medicine, Iowa City, 1914; city health officer; aged 64; died, May 23, of coronary occlusion.

Albert Paul Condon, Omaha; Rush Medical College, Chicago, 1900; on the staff of the Nicholas Senn Hospital; aged 71; died, May 27, of arteriosclerotic heart disease.

Walter Scott Carswell, Baltimore; University of Maryland School of Medicine, Baltimore, 1895; aged 64; died, May 18, in Ocean City, N. J., of coronary thrombosis.

C. P. Bradley, Lindside, W. Va. (licensed in West Virginia in 1898); aged 83; died, May 21, in St. Luke's Hospital, Bluefield, of injuries received when struck by a truck.

John Mortimer Hayes, Davidsonville, Md.; University of Maryland School of Medicine, Baltimore, 1901; aged 64; died, May 16, of arteriosclerotic cardiovascular disease.

Benjamin Franklin Chambers, Lyons, Ind.; Central College of Physicians and Surgeons, Indianapolis, 1897; aged 71; died, May 31, of a self-inflicted bullet wound.

Thomas Elzie McCaughan, Long Beach, Calif.; Rush Medical College, Chicago, 1895; aged 69; died in April in the Community Hospital of coronary occlusion.

Charles F. Meek, New Baltimore, Mich.; Queen's University Faculty of Medicine, Kingston, Ont., 1899; aged 70; died, May 22, of carcinoma of the colon.

George Grant ✠ Wishek, N. D.; Illinois Medical College, Chicago, 1904; formerly county coroner; aged 65; died, May 20, of pneumonia and diabetes mellitus.

Norman McCormack, Renfrew, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1885; died, April 11.

F. G. Logie, Vancouver, B. C., Canada; McGill University Faculty of Medicine, Montreal, Que., 1907; died, April 28.

Correspondence

ACETYLCHOLINE IN PAROXYSMAL TACHYCARDIA

To the Editor:—In Queries and Minor Notes in THE JOURNAL, June 10, page 2459, a question is answered regarding the use of acetylcholine in attacks of paroxysmal tachycardia. The answer to the question contains a grievous error in failing to distinguish between the highly unstable acetylcholine and the much more stable choline derivatives, such as mecholyl and doryl. One would suppose from reading the answer that acetylcholine would stop attacks of paroxysmal tachycardia when given in doses of from 20 to 30 mg. subcutaneously and that it would cause flushing, salivation, sweating and possibly more serious effects in this dosage. This is completely erroneous. Acetylcholine given in this dosage subcutaneously causes practically no effects whatever, and there is no valid evidence that it has ever stopped an attack of paroxysmal tachycardia.

Had the question read "please inform me regarding the use of acetyl-β-methylcholine (mecholyl) in paroxysmal tachycardia" the answer would have been substantially correct.

Acetylcholine given subcutaneously is a very weak drug. The more stable derivatives are among the most powerful drugs known, so it is essential that physicians distinguish between them.

ISAAC STARR, M.D., Philadelphia.
Research Therapeutics, University of Pennsylvania School of Medicine.

MEDICAL HISTORICAL ITEMS SOUGHT

To the Editor:—The Medical Society of South Carolina was organized in December 1789 and holds its sesquicentennial this year.

In looking over the old minutes I find that there are several valuable things that have been lost, and of course we are interested in finding them. Many of the valuable old books disappeared during the occupation of Charleston by federal troops; a few of these were recovered just after the war.

Of interest to us is what is called a "portrait miniature" of Dr. Hermann Boerhaave, the celebrated Dutch physician and teacher, 1668-1738. This was presented to the society in 1815 by Dr. Thomas Lining, the grandson of our renowned Dr. John Lining. Dr. Boerhaave presented this himself to Dr. John Lining.

Another is a portrait of John Hunter, 1728-1793, presented to this society in 1854. If through your columns we might be able to find these portraits and volumes we would greatly appreciate it.

JAMES J. RAVENEL, M.D., Charleston, S. C.
President, Medical Society of South Carolina.

FUNGOUS INFECTIONS TREATED BY IONTOPHORESIS OF COPPER

To the Editor:—Although Drs. Haggard, Greenberg and myself (THE JOURNAL, April 1, p. 1229) did not claim to have originated a new method of treatment for fungous infections, two investigators, in addition to those quoted in our article, have called our attention to the fact that they had used this method and had published results while our investigations were still under way. In February 1936 Jersild and Plessner (*Bull. Soc. franç. de dermat. et. syph.* **43**:450 [Feb.] 1936) reported their successful treatment of epidermophytosis of the extremities by a method varying only slightly from the method used by us. In addition, Martin, Baker and Conant (*Am. J. Trop. Med.* **16**:593 [Sept.] 1936) reported successful treatment of blastomycosis by iontophoresis of copper.

Although both of these publications had escaped our notice at the time we published our article, the fact that these investigators have also used this method successfully in the treatment of fungous diseases is gratifying, and we are happy to acknowledge the priority of their publications.

MAURICE J. STRAUSS, M.D., New Haven, Conn.

"COLOSTRIC ANTIBODIES"

To the Editor:—"The demonstration by Schneider and Szathmary of Budapest of an abrupt rise in specific antibody titer of the blood serum of newborn calves following the first feeding of colostrum is confirmatory evidence in support of current belief as to the mechanism of postpartum transfer of maternal immunity."

This is the opening sentence of an editorial, Colostric Antibodies, appearing in THE JOURNAL, June 3, page 2289. From this the clinician might gather the impression that colostrum feeding is an essential factor in the immunity of the human newborn infant.

I would like to refer the reader to an editorial, Human Colostrum, appearing in THE JOURNAL, Aug. 25, 1923, on the studies of Kuttner and Ratner, then working in the laboratories of Hans Zinsser. To quote directly from the editorial:

> On reflection, it is obvious that early immunity may be conferred on the offspring either through the placenta or with the colostral milk. The records obtained with some species indicate clearly that the placenta is impermeable to proteins and does not permit the passage of maternal antibodies. Indeed, earlier investigators frequently expressed the belief that antibodies appear in the fetal blood only when the placenta is injured in some way; and they regarded placental transmission of antibodies as a pathologic rather than a physiologic process. Such conclusions, it should be emphasized here, were derived from studies of laboratory animals. In harmony with data already on record, Kuttner and Ratner of Columbia University College of Physicians and Surgeons have found that the human placenta is permeable to diphtheria antitoxin. According to their determinations, the concentration of the latter in cord blood corresponds with considerable accuracy to that in the blood of the mothers, there being no measurable loss of antitoxin in passage through the placenta. Kuttner and Ratner state that human colostrum occasionally contains small amounts of the antitoxin; but the quantity is always less per volume than is found in the blood serum of the mother or in the cord blood. In the cases studied, the antitoxin content of the infants' blood failed to show an increase attributable to colostrum feeding. Furthermore, in contrast to what is clearly the case in calves, clinical studies have failed to reveal to the New York investigators evidence of possible harm to the infant resulting from the omission of colostrum from its earliest diet.
>
> How are such apparent discrepancies between the species studied to be explained? Kuttner and Rattner remind us that well known histologic differences in the placentas of the various animals may suffice to account for the varying results with respect to placental exchange. In the human organ the maternal blood is separated from the fetal by a single layer of cells, whereas in the ruminant the placenta consists of three-cell layers. The differences in permeability seem to be in accord with the unlike physical basis offered by the dissimilarity of structure. In goats and cows, with a placental makeup that is fairly complex, placental transmission of immune substances may not occur, so that the colostrum becomes the main agent for transmitting immunity from mother to offspring. In man it is otherwise. In this connection, reference has been made by Kuttner and Ratner to some of the striking differences in the conditions of the mammary secretion in animals, such as cows, with the placenta impermeable, and the newborn calf dependent mainly on colostrum for the transmission of antibodies; and in man, with the placental structure simpler and more permeable. The cow's udder at the time of parturition, they point out, is filled with approximately 20 pounds (9 Kg.) of colostrum, which is immediately and reflexly ingested by the calf shortly after birth to the extent of about 2 pounds (0.9 Kg.) at the first feeding. In human beings, colostrum does not appear for at least twelve hours after birth, and is secreted in amounts not greater than 5 cc. in the first twenty-four hours after birth, and not exceeding 90 cc. after forty-eight hours. In the face of the great interest recently awakened in the possible functions of colostrum, a problem long before physiologists and pediatricians, it would probably be a step too far backward to conclude that colostrum feeding has no significance whatever to the human infant—until the evidence is more compelling. But the earlier enthusiasm for the immunity functions of the first formed milk are being somewhat dispelled so far as the human species is concerned.

I believe that this recent editorial might arouse unjustifiable enthusiasm in relation to the immunity functions of colostrum as far as the human subject is concerned, particularly in the light of Alexis Carrel's leading article in the *Reader's Digest* (June 1939) on breast feeding, in which he states that colostrum is essential for the immunity of the human newborn infant.

This recent work from Budapest is corroborative of the classic experiments of Theobald Smith and his co-workers with the bovine species but is not directly applicable to the human problem. Thus nothing new is added to the situation as it stood sixteen years ago.

BRET RATNER, M.D., New York.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

THROMBOPENIC PURPURA

To the Editor:—**In the light of our present knowledge is the best method of treatment for thrombopenic purpura medical or surgical? Also what is the present status of snake venom treatment in this condition?**

M.D., Illinois.

ANSWER.—There is at present no specific medical treatment for thrombopenic purpura. Good results have been reported for many different types of therapy, which in most instances have not been confirmed by further investigation. The probable reason for this is that thrombopenic purpura presents a variable clinical picture; it may be either acute or chronic, and either type may be mild or severe. It is well known that a large percentage of patients with their first episode of acute thrombopenic purpura often recover spontaneously and usually do well on symptomatic treatment alone. On the other hand, the acute fulminating type, characterized by marked bleeding, toxemia, fever and leukocytosis, is refractory to all forms of treatment and usually ends fatally. Patients with this form rarely survive splenectomy.

The treatment of the first episode of bleeding and of the mild attacks of chronic purpura should be medical, such as blood transfusions and snake venom. The use of ascorbic acid, liver extract, parathyroid extract and irradiation of the spleen has not yet yielded consistently good results in chronic cases. Splenectomy should be resorted to if bleeding is severe or is not affected by medical treatment and if recurrence of bleeding is frequent. Splenectomy is curative in the majority of the chronic forms of the disease. It must be remembered, however, that it is associated with a mortality rate of from 15 to 20 per cent.

Although mocassin venom is only a palliative remedy, it should be given a trial in most cases. It usually causes a remission in the acute forms of the disease except in the acute fulminating type, in which it may give severe reactions. It is associated with improvement in about 50 per cent of the chronic cases. It can be determined after a few injections whether the snake venom will be effective by noting the reaction to an intracutaneous injection. A reversal from a positive to a negative local reaction is usually associated with cessation of bleeding, although the platelet count is unaffected.

Two good reviews of the indications and results of medical and surgical treatment of the disease have recently appeared in THE JOURNAL (Wintrobe, M. M.; Hanrahan, E. M., and Thomas, C. B., Oct. 9, 1937, p. 1170, and Rosenthal, Nathan, Jan. 14, 1939, p. 101).

HERPES OF CORNEA AFTER SPINAL ANESTHESIA

To the Editor:—**A young woman had a pelvic operation under spinal anesthesia. A day or so later a herpetic lesion developed on the left cornea. Is there any connection and what treatment is recommended?**

M.D., Michigan.

ANSWER.—Ocular lesions after spinal anesthesia occur quite infrequently. Of these, paralysis of the sixth nerve has been reported in more than 200 cases, but other cranial nerves, such as the third, fourth or seventh may be involved rarely. Most of these reports date back many years, and with the more recent refinements of technic they have practically disappeared. Together with paralysis of the cranial nerves, a series of symptoms such as headache, nausea, vomiting and stiff neck appear and are suggestive of a meningeal irritation. A spinal puncture reveals a high cell count but cultures are usually sterile. Herpes zoster of the ophthalmic branch of the fifth nerve might be due to an irritation of the sensory root.

If the lesion described is herpes simplex of the cornea, it has the significance of and is identical with a "fever blister." This corneal herpes may follow any febrile reaction or any operation and is due to a virus that can be readily transplanted into a rabbit's cornea. Nonspecific foreign protein therapy and gentle curettement of the sloughing epithelium with a mild antiseptic and anesthetic solution is the customary treatment and should be in the hands of a competent ophthalmologist.

TREATMENT OF AMEBIC DYSENTERY

To the Editor:—**What is the best opinion on the usefulness of stovarsol in amebic dysentery as to its therapeutic value during the acute stages and its preventive value after acute symptoms have subsided under emetine?**

W. F. Tanner, M.D., Charleston, S. C.

ANSWER.—Stovarsol is not the drug of choice in the treatment of amebic dysentery. If one feels that one must use an arsenical preparation, carbarsone may be given, one tablet three times a day for a period of seven days. A week or ten days should elapse before a subsequent course of the drug is advised. During this time one can examine the stools for the presence or absence of either the parasite or its cyst. Carbarsone has less tendency to give the toxic reactions that have been accredited to stovarsol and it is much more parasiticidal. No arsenicals, however, should be used in the presence of an acute phase if there is any possibility of a hepatic involvement. During this time one may give up to as much as from 6 to 8 grains (0.4 to 0.5 Gm.) of emetine hydrochloride as a total accumulative dose but not more, and, if the emetine hydrochloride is to be repeated, at least ten days should elapse after the last dose before it is started again. In addition to this, if there is an acute phase to the disease and there is a possibility of hepatic involvement, one of the iodine preparations, namely iodoxyquinoline sulfonic acid or vioform-Ciba, should be used. Finally, it is to be remembered that, even though the cysts or parasites may have disappeared from the stools, that is no reason for the discontinuance of the therapeutic barrage at this disease and courses of arsenic or iodine preparations should be kept up at frequent intervals for a period of about one or two months. The patient should then report back at intervals of six months to see that he is free from the disease.

GARRÉ'S OSTEOMYELITIS

To the Editor:—**Please advise me as to nature, prognosis and treatment of Garré's osteomyelitis in a girl of 18.**

M.D., New York.

ANSWER.—Garré's sclerosing osteomyelitis is a localized, proliferative, chronic, nonsuppurative sclerosing osteitis which appears in the roentgenogram as a spindle-shaped thickening of the bone. The medullary cavity is reduced in size and the bone is increased in density. The lower extremity is more often involved than the upper. The lesion is due to an infection with an organism of attenuated virulence in combination with chronic irritation. A history of pneumonia, influenza, typhoid or other infectious disease may precede the onset. Bennett and Hopkins report a case of sclerosing osteomyelitis associated with trichinosis, although they were unable to establish a causal relationship.

Of the thirty cases reported by Henderson, the tibia was involved in sixteen, the femur in ten, the fibula in two, the ulna in one and the second metacarpal bone in seven. Nineteen patients were males and eleven were females. Twenty-two were under 30 years of age. The condition had persisted an average of six years. Trauma was a factor in seven and infectious disease in eight.

The most commonly affected bone is the tibia, usually in its middle segment in relation to the nutrient artery.

The pathologic changes are characterized by a circumscribed increase in the diameter of the bone, by a thickening and eburnation of the cortex and by a distinct narrowing of the medullary cavity, which might be completely obliterated. Sections of the eburnated bone, when placed under the microscope, show the lacunas to be overactive in the production of bone, causing a localized ivory-like formation in the area involved; the blood vessels are choked off and the vascularity of the medulla is reduced by the encroachment on all sides of the enlarged and thickened cortex. The periosteum is thickened.

The chief symptom is pain, which is of a deep, aching character which is worse at night and exaggerated by physical activity. There is local swelling and heat, and often tenderness on deep pressure. Occasionally the onset may be acute with high fever and leukocytosis, as in cases of suppurative osteomyelitis, but more often it is subacute or chronic. In cases of acute onset, suppuration may ensue. The pain is characterized as boring and deep and is worse on exertion and at night. Tenderness is elicited on local pressure. Bony thickening is quite distinct on palpation and is confirmed by x-ray examination.

At the onset there may be considerable swelling of the soft tissues with venous enlargement and local heat. As this subsides the bony enlargement remains. The bone may actually be increased in length.

In a typical case the roentgenogram reveals a spindle-shaped enlargement in the shaft well away from the epiphysis, a distinct

thickening of the cortex with a smooth periosteal covering, and a narrowing of the medullary cavity due to sclerosis and eburnation.

Laboratory tests may reveal leukocytosis, an increased sedimentation rate, a decrease in the number of red blood cells but a negative blood culture. Serologic tests for syphilis are usually negative.

It may be difficult to differentiate Garré's lesion from syphilis, sarcoma, Paget's disease and osteitis fibrosa cystica. According to Cohn the destructive type may show as much destruction as sarcoma. The osteoporotic type suggests a malignant condition, especially when syphilis and Paget's disease can be ruled out.

In doubtful cases an exploratory incision should be made; examination of the frozen pathologic section taken at the time of operation in order to determine the exact pathologic process will prevent unnecessary amputations.

The course of the disease is long. Recurrences, even after operation, are not infrequent. The condition is usually relieved by removing the cortex from a portion of the bone or by trephining, but it is quite likely to recur and in some instances is resistant to all measures of treatment.

Treatment is surgical. Two procedures have been used to advantage, "gutting" of the bone and trephining with multiple drill holes, the latter extending through both cortices. Relief is obtained by the improved circulatory status, the pain probably being caused by the inability of the blood to flow through the dense bone. Some of the patients in Henderson's series failed to obtain relief by the gutting and were relieved by trephining, while the opposite has been true of others. All foci of infection should be eliminated.

DERMATITIS FROM RUBBER GLOVES AND RINGWORM

To the Editor:—**For the past two years I have been troubled with a persistent ringworm of the hands which gets well and then reappears. One month ago I had occasion to keep a pair of rubber gloves on for about six hours, removing them only long enough to rescrub, and two days later I had a severe dermatitis. Patch tests showed it to be the rubber. Powder and soap gave a negative but a patch test of the glove definitely gave a positive reaction. These gloves were a latex glove made by the Cory Rubber Company of Marion, Ohio. I have had occasion to scrub for delivery twice since my original outbreak, and having the gloves on for twenty minutes caused severe reactions again. Is this a common occurrence or am I a freak? Is there any other glove that I can wear or any reason why these vary from any other? At the present time I am patch testing myself with various gloves but so far I haven't read the results. My ringworm vesicles look much like dermatitis venenata vesicles, so that these gloves may have been the seat of my trouble for a year but I could not figure out why the sudden flare-up. I would appreciate your opinion and the incidence of such sensitizations; also some literature on the subject.**

Stanley L. Hardy, M.D., Las Vegas, Nev.

ANSWER.—It is possible that the so-called ringworm attacks were really allergic reactions to rubber. In the manufacture of rubber goods many chemicals are used to which the skin is easily sensitized. Cases of dermatitis, sometimes severe, are common among workers in rubber, and it is not surprising that an occasional case of dermatitis is seen which has been caused by such articles of clothing as sweat pads, rubber stockings or girdles. Manufacturers of rubber goods, for their own protection as well as for the comfort of their workers and customers, are constantly trying to find new methods that will eliminate these hazards.

According to Schwartz (Skin Hazards in American Industry, Pub. Health Bull. 215, page 5), light rubber goods such as surgical gloves are usually made by the dipping process. The rubber is prepared, dissolved in naphtha and placed in trays. Into this solution the molds are dipped, a layer of rubber is deposited on them, they are taken out and dried and then dipped again and again until the rubber is thick enough. Then the rubber must be cured by heat or by chemicals such as carbon disulfide or sulfur monochloride. The latter is responsible for much of the dermatitis caused by rubber.

The rubber during the dipping is sometimes deposited by the aid of an electric current, or porcelain forms are coated with a gel which causes the rubber to deposit when the form is dipped.

The chief source of irritation arises from the use of sulfur monochloride in the vapor method of curing. This may leave a small amount of hydrochloric acid on the rubber, which is supposed to be neutralized by ammonia; but this part of the process is not always complete. To guard against irritation from this source, all new rubber goods should be thoroughly washed in a solution of soap and ammonia, then rinsed well before being used. (Obermayer, M. E.: Eczema Due to Hypersensitiveness to Rubber, *Arch. Dermat. & Syph.* **27**:25 [Jan.] 1933. Schwartz, L., and Andrews, G. C.: Investigation of a Method for Preventing Dermatitis from Dress Shields, *J. Invest. Dermat.* **1**:219 [March] 1938).

In a personal communication, Dr. Schwartz writes: "The gel method of making rubber gloves requires curing, and if the gloves are acid cured they may be a source of dermatitis. Rubber gloves in order to be the least possible risk of causing dermatitis should be compounded with accelerators and antioxidants which have not been reported to have caused dermatitis and should be heat cured either by the dry method or by hot water. I think that the Wilson Rubber Company of Canton, Ohio, endeavors to make such a glove."

The method of patch testing may be of great help in choosing the best rubber glove, but is not infallible. It is best to place the patches near the area that has been irritated.

After rubber gloves have been used, irritation may be lessened by washing the hands in a weak alkaline solution, then anointing them with rose water ointment, wool fat or a combination of these.

INJECTIONS OF THYROXINE INTO MIDDLE EAR

To the Editor:—**I should appreciate receiving the treatment of deafness by injections of thyroxine into the middle ear. Just how are these injections made; how much is given and how often?**

M.D., Minnesota.

ANSWER.—The thyroxine treatment of otosclerosis was first advocated by Gray in Great Britain and studied most extensively in this country by Dr. Max Goldstein (*Tr. Am. Laryng. Rhin. & Otol. Soc.* **44**:118, 1938).

Thyroxine is used in the form of tablets, 1/64 grain (0.001 Gm.). One tablet is dissolved in four drops of warm sterile distilled water and injected directly into the middle ear cavity so that it may come in contact with the promontory and oval window. Any syringe and bayonet bent needle may be used.

For anesthesia, an aniline-cocaine hydrochloride solution (chemically pure aniline 90 parts, cocaine hydrochloride 10 parts) has been recommended. Five drops is instilled into the ear for five minutes and then the remaining solution carefully wiped out.

The site of injections is at a point halfway between the tip of the handle of the malleus and the posterior rim of the annulus tympanicus. Immediately after injection the patient sits erect and with the head thrown well backward keeps the mouth open for three minutes. This position keeps the fluid from escaping down the eustachian tube and also insures bathing the region of the round window. Following injection, the patient remains quiet for from twenty to thirty minutes and is not too active the rest of the day.

The treatment consists of four consecutive injections made alternately in the right and left ears at intervals of one week. This allows a period of fourteen days in each ear for the absorption of the thyroxine solution.

"PREGNACOL" PREGNANCY TEST

To the Editor:—**Have you any data as to the worth of Ernst Bischoff's "pregnacol" test for pregnancy?**

Hilton A. Wick, M.D., New Bethlehem, Pa.

To the Editor:—**I should like to inquire concerning the accuracy of the Gruskin test for pregnancy.**

Herman C. Graves, M.D., Grand Junction, Colo.

ANSWER.—The Gruskin test for pregnancy (pregnacol) is apparently carried out by injecting intradermally "an antigen prepared from the fetal layer only of the human placenta." The diagnosis of pregnancy is said to be positive if pseudopods arise from the wheal at the site of injection and negative if there is an absence of the pseudopods. The test is discussed in papers by Gruskin (*Am. J. Surg.* **31**:59 [Jan.] 1936 and *M. World* **56**:109 [Feb.] 1938), and by Schwartz (*Am. J. Surg.* [Aug.] 1936). Graffagnino and von Haam (*South M. J.* **31**:169, [Feb.] 1938) state that this test is unreliable. There appears to be no evidence to indicate that this test approaches the reliability of the Aschheim-Zondek or the Friedman test.

TUBERCULOSIS AND EXPOSURE TO THE SUN

To the Editor:—**Is there any contraindication to the direct exposure of the chest of a tuberculous patient to the rays of the sun? If so, please explain. Is pulmonary hemorrhage more prone to occur after such exposure and, if so, why?**

M.D., Virginia.

ANSWER.—Yes, without the advice of an experienced guide. An overdose of the sun's rays to a tuberculous patient is like an overdose of a drug—highly toxic. Sunlight causes a stimulation in mild doses which is beneficial, but when it is acquired as a result of an extensive exposure which causes

a first or second degree sunburn, it is, like any other burn, toxic. This toxicity causes a nonspecific perifocal reaction which may result in hemorrhage.

The exposure should be for only a few minutes a day at first and then gradually increased until tanning develops, which protects against burning.

PREMATURE GRAYING OF HAIR

To the Editor:—Can anything be done for extremely premature graying of the hair of a child? My niece, now 14 years of age, is getting numerous gray hairs and has had some gray hairs since the age of 10. She will apparently be noticeably gray at 18 at the present rate. She is a normal, well developed girl, there being nothing abnormal in her history except an adolescent goiter which is now present and a lifelong history of an extreme type of allergy. When she was an infant, cow's milk (also goat's milk) produced immediate urticarial wheals when brought in contact with the skin. Attemps to feed her either cow's or goat's milk at that time made her violently ill. There was a lesser, though marked, degree of allergy with regard to eggs. Her father, aged 48, began to gray at about 35 and his hair is now almost white. Her paternal grandfather had gray hairs at 18 and was white haired at 50. In writing this I have an idea that it is a rather hopeless proposition but thought possibly some new ideas might have been developed recently with regard to such conditions.

M.D., Texas.

ANSWER.—Exceptional cases of canities have been reported in which the gray hair resumed its normal color after years of grayness. This restoration of color was in some of these cases spontaneous and in other instances followed long continued medication with pilocarpine or acetic acid. As Galewsky (Handbuch der Haut- und Geschlechtskrankheiten, Berlin, Julius Springer, 1932, vol. 13, pt. 1, p. 163) suggests, these were probably cases due to some remediable condition and not to an inherited characteristic, as in the case in question. Ordinary canities, as in the case under discussion, cannot be remedied in any way except by dyeing the hair, which is not recommended.

LABYRINTHITIS FROM MUMPS

To the Editor:—A youth aged 18, on April 7, five days after onset of the mumps on the left side only, suffered dizziness and tinnitus on the left side and vomited every time he arose from his bed. He soon lost his hearing completely on the left side. Will you describe from your sources of information the pathology, etiology (toxic, hemorrhagic and the like) and treatment in such cases. I am using infra-red rays and diathermy and potassium iodide internally.

M.D., Indiana.

ANSWER.—Some involvement of the labyrinth during an attack of mumps is not uncommon. Severe disturbances such as noted in this case are rare. The complication is nearly always unilateral and may be due to a toxic action. With complete loss of hearing in the ear affected, deafness is likely to be permanent. Large doses of potassium iodide probably offer the most hope.

TRANSMISSION OF ECHINOCOCCUS

To the Editor:—Is is possible for a man working in a slaughterhouse to contract echinococcosis through the pores of the skin of the hands? My opinion has always been that the condition is usually caused by the ingestion of the ova. Have you any record of a case of this type being contracted through the pores of the skin of the hands?

Roy C. Noble, M.D., Beatrice, Neb.

ANSWER.—It would not seem to be possible for a man to acquire echinococcosis through the pores of the skin while working in a slaughterhouse. No cases have been found. Daughter cysts have been propagated in rabbits by inoculating the latter with active scolices from hydatid cysts. Gross contamination of an open wound with the contents of a hydatid cyst could conceivably lead to secondary echinococcosis. The usual manner of infection in man is the ingestion of ova from infected dogs, coyotes or wolves.

CANCER AMONG PHYSICIANS

To the Editor:—Please inform me as to the comparative malignancy rate between medical men working with x-rays and those who are rarely exposed. Also the comparative statistics between medical men and the general population, as regards malignancy.

M.D., Canada.

ANSWER.—No comprehensive statistics indicating the comparative incidence of cancer among medical men working with x-rays and those not working with this agent have been found. The same applies to the comparison of the incidence of cancer between medical men and the general population. This statement does not relate, of course, to cancer of the skin, which occurs among radiologists who work with x-rays and radium and are not adequately protected from these agents.

"DROP STITCH IN THE BACK"

To the Editor:—Will you kindly enlighten me as to the cause of so-called dropped stitch in the back? What really happens when a person bends over to put a piece of paper in a wastebasket and is taken with severe pain in the back which frequently seems to "cut the wind off" for a few minutes and leaves him with a lame back that bothers him severely for a week or two? The only treatment that I have found to be of value for these so-called dropped stitch cases is bed rest for a day or two and then strapping the back with adhesive plaster. Heat is of value also. Are the salicylates of value, or what better treatment is there?

M.D., Maine.

ANSWER.—"Drop stitch in the back" is a term which has a restricted use. It evidently corresponds to what has been called a "hexenschuss" or the "witch's shot." The probabilities are that when a person bends over to put a piece of paper in the wastebasket and is afflicted with pain severe enough to "cut off his wind" he has torn a ligament, aponeurosis, fascia or muscle. The application of adhesive strapping, rest in bed, local applications of heat and administration of salicylates either by mouth or by rectum are usually helpful. In some cases a belt, brace or plaster cast is advisable. The condition is more apt to occur in rheumatic persons or those who have fibrositis or myositis.

THIAMIN CHLORIDE SYNTHETIC

To the Editor:—Can any untoward effects be anticipated from prolonged intramuscular injections of vitamin B_1 synthetic?

M. L. Raymond, M.D., Homer City, Pa.

ANSWER.—Many clinicians have given daily injections of as much as 100 mg. of the synthetic thiamin chloride over a considerable period without harm. In all probability such a large dose cannot be fully utilized by the organism, much of the vitamin escaping through the kidney before being "stored" in the tissues or used in its metabolism. From 20 to 50 mg. daily appears to be a valuable therapeutic range when large doses must be given. After about two weeks of such administration the daily dose may well be reduced to 10 mg. and continued until the patient has been relieved of all symptoms. It is unlikely that any dose short of that which would be contraindicated on economic grounds alone would be harmful.

ANTIANEMIC VALUE OF LIVER

To the Editor:—What is the relative value (antianemic value—hematogenic value) of calf's liver and lamb's liver?

M.D., New Jersey.

ANSWER.—There is no experimental evidence regarding the antianemic activity of lamb's liver, but one would assume that it is about the same as calf's liver. The response of the patient to lamb's liver should determine this point.

PELVIC PAIN

To the Editor:—In the May 27 issue of The Journal a physician from Illinois inquires concerning continued postoperative pelvic pain. He mentions the fact that the pain is frequently in the back and radiates down the thighs. May I point out that any patient with pain in the back, particularly if there is radiation of pain down the thighs, should receive a thorough orthopedic examination. Sometimes such an examination will relieve one of the necessity of performing a pelvic operation. If the pelvic operation has already been performed and the back pain and radiation of pain persist, the indication still exists for an orthopedic examination. I am sure that most orthopedic surgeons have seen cases in which pelvic operations have been performed on patients whose major trouble was back pain, with or without radiation, in which the back pain persisted following operation and was relieved by the proper orthopedic measure. I can call to mind at the moment one case in which a young girl whose major complaint was a lumbosacral pain had been advised to have a pelvic operation. Examination showed an old fracture of the coccyx, and when the coccyx was removed the pain disappeared. Another girl, 19 years of age, had a pelvic operation performed, and when the pain persisted examination disclosed a Ewing's tumor in the fourth lumbar vertebra. Such cases occur all too often, and I feel that one needs to bear in mind the orthopedic possibilities in all cases in which there is back pain.

Allen S. Lloyd, M.D., Norfolk, Va.

TREATMENT OF TAPEWORM INFESTATION

To the Editor:—The note on the treatment of tapeworm infestation in The Journal, May 20, page 2084, mentions only aspidium, the traditional remedy (Dioscorides, "Greek Herbal," Oxford, England, University Press, 1934, p. 585). My attention was recently directed to an article (Sandground, J. H.: *New England J. Med.* **218**: 298 [Feb. 17] 1938) in which evidence is cited that seems to indicate that carbon tetrachloride in 4 cc. doses is more effective, and I therefore call this article, which seems to me a good one, to your attention.

W. T. Dawson, Department of Pharmacology, University of Texas, Galveston, Texas.

Medical Examinations and Licensure

COMING EXAMINATIONS

NATIONAL BOARD OF MEDICAL EXAMINERS SPECIAL BOARDS

Examinations of the National Board of Medical Examiners and Special Boards were published in THE JOURNAL, July 29, page 444.

STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 18-20. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ARIZONA: *Basic Science.* Tucson, Sept. 19. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson.

ARKANSAS: *Medical (Regular).* Little Rock, Nov. 9-10. Sec., Dr. D. L. Owens, Harrison. *Medical (Eclectic).* Little Rock, Nov. 9-10. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Written examinations.* Los Angeles, Aug. 7-10 and Sacramento, Oct. 16-19. *Oral examinations* (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), Los Angeles, August 7, and San Francisco, Nov. 15. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: *Basic Science.* New Haven, Oct. 14. *Prerequisite to license examination.* Address State Board of Healing Arts, 1895 Yale Station, New Haven.

FLORIDA: Jacksonville, Nov. 13-14. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, Oct. 10-11. Joint-Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDAHO: Boise, Oct. 3-4. Dir., Bureau of Occupational License, Mr. H. B. Whittlesey, State Capitol Bldg., Boise.

ILLINOIS: Chicago, Oct. 17-19. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

INDIANA: Indianapolis, June 18-20. Sec., Board of Medical Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

KENTUCKY: Louisville, Dec. 5-7. Sec., State Board of Health, Dr. A. T. McCormack, 620 S. Third St., Louisville.

MARYLAND: *Regular.* Baltimore, Dec. 12-15. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic.* Baltimore, Dec. 12-13. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MICHIGAN: Lansing, Oct. 11-13. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 100 W. Allegan St., Lansing.

MINNESOTA: *Basic Science.* Minneapolis, Oct. 3-4. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical.* Minneapolis, Oct. 17-19. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

MISSISSIPPI: *Reciprocity.* Jackson, December. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MONTANA: *Reciprocity.* Helena, Oct. 2. *Examination.* Helena, Oct. 3-4. Sec., Dr. S. A. Cooney, 216 Power Block, Helena.

NEBRASKA: *Basic Science.* Lincoln, Oct. 3-4. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, 1009 State Capitol Bldg., Lincoln.

NEVADA: *Reciprocity and oral examination.* Carson City, August 7. Sec., Dr. John E. Worden, 311 W. Robinson St., Carson City.

NEW HAMPSHIRE: Concord, Sept. 14-15. Sec., Board of Registration in Medicine, Dr. T. P. Burroughs, State House, Concord.

NEW JERSEY: Trenton, Oct. 17-18. Sec., Dr. Earl S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 9-10. Sec., Dr. Le Grand Ward, 135 Sena Plaza, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 18-21. Chief, Bureau of Professional Examinations, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

OKLAHOMA: Oklahoma City, Dec. 13. Sec., Dr. James D. Osborn, Jr., Frederick.

OREGON: *Basic Science.* Portland, Oct. 28. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

PUERTO RICO: Santurce, Sept. 5. Sec., Dr. O. Costa Mandry, Box 3854, Santurce.

VERMONT: Burlington, Feb. 13-15. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, Dec. 13. Sec., Dr. J. W. Preston, 30½ Franklin Road, Roanoke.

WISCONSIN: *Basic Science.* Madison, Sept. 23. Sec., Professor Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Medical.* Madison, Jan. 9-11. Sec., Dr. Henry J. Gramling, 507 Mariner Tower, Milwaukee.

WYOMING: Cheyenne, October. Sec., Dr. M. C. Keith, Capitol Bldg., Cheyenne.

Colorado June Examination

Dr. Harvey W. Snyder, secretary, Colorado State Board of Medical Examiners, reports the written examination held at Denver, June 14-16, 1939. The examination covered eight subjects and included eighty questions. An average of 75 per cent was required to pass. Thirty-nine candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Colorado School of Medicine		(1938)	88, (1939) 80, 81, 82, 82, 83, 83, 83, 84, 84, 84, 84.5, 85, 85, 85.5, 86, 86.5, 86.5, 86.5, 87, 87, 87, 87, 87, 87, 87.5, 88, 88, 88, 88, 88, 88, 89, 89, 89, 89.5, 90, 90
Northwestern University Medical School		(1939)	85.5

Fourteen physicians were licensed by endorsement during July. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists		(1923), (1933) (1930)	California, N. B. M. Ex.
University of Colorado School of Medicine		(1935)	Utah
Northwestern University Medical School		(1936)	Wisconsin
University of Kansas School of Medicine		(1938)	Kansas
Boston University School of Medicine		(1935)	N. B. M. Ex.
University of Michigan Medical School		(1935)	Michigan
St. Louis University School of Medicine		(1938)	Missouri
Washington University School of Medicine		(1937)	Missouri
Hahnemann Medical College and Hospital of Philadelphia		(1925)	Penna.
University of Pennsylvania School of Medicine		(1927)	New York
Baylor University College of Medicine		(1938)	Texas
University of Texas School of Medicine		(1938)	Texas

Maryland (Homeopathic) June Examination

Dr. John A. Evans, secretary, Board of (Homeopathic) Medical Examiners, reports the written examination held at Baltimore, June 20-21, 1939. The examination covered nine subjects and included seventy questions. An average of 70 per cent was required to pass. Four candidates were examined, all of whom passed. The following school was represented:

School	PASSED	Year Grad.	Per Cent
Hahnemann Medical College and Hospital of Philadelphia		(1938)	80, 82, 83, 87

Book Notices

The Abnormal in Obstetrics. By Sir Comyns Berkeley, M.A., M.C., M.D., Consulting Obstetric and Gynæcological Surgeon to the Middlesex Hospital and the City of London Lying-In Hospital, Victor Bonney, M.S., M.D., B.Sc., Consulting Obstetric and Gynæcological Surgeon to the Middlesex Hospital, and Douglas MacLeod, M.S., M.B., F.R.C.S., Assistant Obstetric Surgeon, St. Mary's Hospital, London. Cloth. Price, $6. Pp. 525, with 6 illustrations. Baltimore: William Wood & Company, 1938.

The purpose of the book is to "aid those ambitious of passing one of the higher examinations of obstetrics" and the practitioner whose major interest is obstetrics. The authors assume that the reader has a textbook available for reference as to procedures and technic. There are few illustrations because the book is for advanced practitioners. Three well known obstetricians wrote the thirty-nine chapters, and one can distinguish differences in style which do not detract from the value of the work.

According to the introduction, "Pregnancy is a state induced by a neoplasm. . . . Moreover, these effects are not paralleled by any other new growth and form a distinctive group in the category of disease." The authors seem to go as far as De Lee, who holds that pregnancy is pathogenic and therefore pathologic.

The authors have set themselves a herculean task. They have endeavored to encompass in 500 pages the wide field of abnormal obstetric conditions, as well as most of the medical and surgical diseases and those treated by the specialties. This brevity necessitates that many conditions receive scanty mention, and, on the other hand, sweeping statements are made with little or no discussion; thus "It is never necessary to pack the uterus for postpartum hemorrhage." Such a divergence from the accepted practice certainly requires not only discussion but broad statistical support. Again, "Obstetrical practice is a branch of surgery. As such not one of the operations with which it is concerned can properly be performed without a general anesthetic." Such a statement denotes a dangerous lack of awareness of modern advances in surgical anesthesia. It is too bad the British do not know the blessings of local and block anesthesia.

The opening chapter deals with sterility; hormonal dysfunction and various other factors are briefly presented and appropriate treatments cautiously recommended. The relationship of the vitamins to pregnancy is discussed, and a short chapter follows on the female sex hormones. The presentation of the toxic states dependent on pregnancy is admirable from the standpoint of treatment. When milder states are accompanied by symptoms of true preeclampsia, cesarean section is advised. On the other hand, conservative or medical treatment is advocated when the eclamptic state already exists. The subject matter is weakened by the consideration of albuminuria as a separate entity. This makes for looseness of classification and inaccuracy of diagnosis.

The finest chapter in the book is that on puerperal sepsis, embodying the well known work of Colebrook and his asso-

ciates. Proper emphasis is placed on the cause, and it is borne out that droplet infection from the respiratory tract and airborne infection by polluted dust are potent factors in producing the disease. In prophylaxis, masking is stressed. The technic of the isolation block of the Queen Charlotte Hospital is given in detail. Prontosil and sulfanilamide therapy are evaluated, and specific instructions are given for administration. Transfusion of blood is recommended only for those patients who have definite anemia.

The American classification for cardiac conditions is recommended, but, in the discussion of anesthesia for cardiac patients, chloroform with oxygen is recommended. When operative procedures are indicated and inhalation anesthesia is contraindicated, spinal anesthesia is proposed with procaine infiltration as an alternative. Chloroform anesthesia and spinal anesthesia in obstetrics, a not small majority claim, are dangerous. Cesarean section has been rather freely recommended; it is recommended for extreme varicose veins of the vulva. The statement is made that the extraction of carious teeth is more likely to be followed by termination of the pregnancy if done after the sixth month rather than before it. For appendicitis complicated by labor, a cesarean section is first done and then an appendectomy. Would not a Latzko abdominal delivery be safer? Mental disorders are ably discussed by Sir Hubert Bond.

The venereal diseases are ably presented, though the authors perhaps lay too much stress on douches and the topical application treatment of gonorrhea. Chapter 14 contains an excellent presentation of diseases of the kidneys, ureters and bladder. The statement is made that if the blood pressure has not returned to normal and albumin has not disappeared from the urine within six weeks the patient most certainly has chronic nephritis. Under uterine dystocia, 5 units of pitocin is recommended for a sluggish uterus in lieu of forceps, though the warning is given that if the baby is not born in thirty minutes it will be asphyxiated. For contraction ring with a dead child and an oblique lie the authors recommend cesarean section rather than embryotomy, which they consider dangerous in this situation. One could imagine such a necessity, but section would be rather a reproach to the art of the obstetrician.

As in most modern textbooks, the classification of Caldwell and Moloy is adopted for the consideration of pelvic deformity. In cesarean section the authors prefer the low cervical section over the classic, but no mention is made of any extraperitoneal method. In the discussion of delay in the birth of the head in breech presentation, the value of forceps extraction is not stressed as much as by French and American accoucheurs. In septic abortion the immediate emptying of the uterus by operative means is advocated, although the authors admit that in severe cases the illness continues.

In the treatment of "accidental hemorrhage" they decry the giving of blood transfusions before the uterus is emptied. In the treatment of placenta praevia, immediate transfusion is recommended if the patient is in shock and the hemoglobin content below 30 per cent. A maternal mortality of 18 per cent is mentioned for manual removal of the placenta in cases of placenta praevia. In the treatment of this condition Berkeley's wide knowledge makes him stress the virtue of a "single" method over "composite" methods. Regarding rupture of the membranes, "We have grave doubt concerning the modern idea of rupturing the membranes early to expedite labor." This statement may well be taken to heart by many obstetricians suffering from that obstetric festination which seems to be epidemic in the world. Two chapters are devoted to diseases of the newborn, and special mention must be made of that splendid portion dealing with erythroblastosis foetalis.

The chapter dealing with analgesia and anesthesia is the poorest in the book. Chloroform is still recommended and spinal anesthesia is condoned. Despite the work of Eastman, nitrous oxide and oxygen are said absolutely to have no adverse effect on either mother or child. The authors admit having had no experience with local infiltration anesthesia or any of the newer forms of nerve blocking. Appropriately enough, one and one-half pages is devoted to the discussion of delayed chloroform poisoning.

The authors' attitude toward the diabetic problem is interesting. The induction of premature labor has no place in their treatment, nor does cesarean section meet with their approval.

The immense number of subjects considered renders the small volume difficult to review, but it is evident that the authors speak from a large and thoroughly digested experience. Their points of view and methods of procedure often differ from those of American physicians, and in this regard, as well as in many others, the book is to be recommended to obstetricians on this side of the Atlantic. The next edition should be twice as large, to enable the authors to complement more fully the knowledge of the abnormal in obstetrics laid down in existing British and American textbooks.

Thirty-Sixth Annual Report, 1937-1938, of the Imperial Cancer Research Fund. Under the Direction of the Royal College of Physicians of London and the Royal College of Surgeons of England. Paper. Pp. 39. London, 1938.

In 1936 Dr. Selbie found that colloidal thorium dioxide in small doses produced sarcoma at the site of the injection in a large proportion of rats and mice. This substance remains in the body indefinitely after injection. The Thirty-Fourth Annual Report contained a warning against the practice of leaving radioactive substances in the human body because of the danger of producing malignant growths. Dr. Foulds injected small quantities into the bases of the nipples of female guinea pigs and obtained one carcinoma and three sarcomas. Ten or fifteen years might be expected to elapse before the drug would produce a tumor in man, and, since the substance has not been in common use for so long, it is premature to conclude that it is harmless because no cancer has been traced to its use.

The report discusses the fundamental difference which is supposed to exist between squamous carcinoma and sarcoma on the one hand and glandular carcinoma on the other hand. In the former it is supposed that the exogenous agent plays the preponderant part, while in the latter the constitutional factor is supposed to be dominant. The opinion is expressed that the search for the stimulus which induces the large and dangerous group of glandular cancers in man may extend beyond the limits of known carcinogenic agents.

Some interesting observations are reported on filtrable tumors and viruses. Experiments designed to test whether a conjunction of tar and virus would produce malignant tumors of the connective tissues in rabbits were started simultaneously in the laboratories of the Imperial Cancer Research Fund and at the National Institute for Medical Research. Tar was injected intramuscularly on several occasions, and subsequently Shope fibroma virus was injected intravenously. The virus localized at the site of the tar injection, producing a fibroma, and in each laboratory one rabbit of a small series subsequently had a sarcoma in the same position. Further studies by Dr. Cramer and Dr. Horning are reported. The simultaneous administration of preparations containing the thyrotropic hormone of the anterior lobe of the pituitary body and of estrone prevented both proliferation of mammary epithelium and degranulation of the anterior pituitary cells, changes which are readily produced by estrone alone. These observations were used in further experiments designed to prevent the spontaneous development of mammary cancer in a strain of inbred mice with a high incidence of mammary cancer.

Dr. Ludford has continued his work on the cultivation of normal and malignant cells on slides and in flasks and has attempted to ascertain the extent to which malignant cells resemble or differ from corresponding normal cells. He found that certain compounds have the property of promoting liquefaction but does not believe that this stimulation of liquefaction is due to a specific action on malignant cells.

Interesting observations on the biology of radiation are reported by Crabtree and Cramer. The retina of the rat was found to be a useful subject for study of the biologic effects of radiation. Their experiments gave no evidence of any dependence of biologic effect on the quality of the radiation used and permitted the following conclusions: 1. Metabolic changes can be induced with small doses of radiation and in a very short time. Glycolysis is damaged almost immediately after the radiation is applied. 2. There appear to be two types of glycolysis, one highly sensitive and one much less vulnerable to radiation. 3. When a given dose in roentgens is applied to tissues but the time of irradiation is prolonged, a significantly greater effect is produced, suggesting that the inhibiting effect is not only a function of the dose but to some extent progressive with time.

Manual of Instructions and Suggestions. Part II: Services for Crippled Children. Child Welfare Division. Harry J. Becker, Director. Paper. No pagination. Lincoln, Nebraska: Board of Control Department of Assistance and Child Welfare, 1939.

The administration of child welfare in Nebraska as described in this manual is a fair sample of the sort of combined medical and welfare program that has grown up in many states. It embraces such diverse elements as the state medical society, the Elks and the American Legion, in addition to a half dozen branches of the county, state and federal government. The successful working of such a program seems to be in about inverse relation to the extent to which governmental, bureaucratic authority is exercised. This manual combines federal, state and local laws and regulations with formal and informal arrangements with voluntary societies. Relations on the medical side are described as follows:

> Close cooperation has been maintained with the state medical association and county medical societies and with other professional and lay groups interested in and concerned with the problems of the child suffering with a physical handicap. On recommendation of the federal and state medical technical advisory committees the medical staff has been selected only from the membership lists of national boards representing the various medical specialties. Medical policy is based on recommendations from members of the medical profession.

Cronología, differenciación, matrícula y distribución geográfica de las sociedades de ciencias médicas. Por Enrique Sparn, secretario de la Academia nacional de ciencias. Homenaje al VI° Congreso nacional de medicina (Córdoba, octubre 16-21, 1938). Paper. Pp. 153. Cordoba (Rep. Argentina): Imprenta de la Universidad Nacional de Córdoba, 1938.

This is a meritorious if perhaps too ambitious attempt at furnishing in an almost untilled field a chronological account of the foundation, classification, membership and geographic distribution of medical and allied societies throughout the world. One misses some historical background in the form of references to such forerunners of modern medical societies as the guilds of the Middle Ages, the colleges of physicians and surgeons chartered in Great Britain and elsewhere since the sixteenth century and, perhaps in a larger degree, the scientific academies which, beginning with the Academia dei Lincei in 1603, sprang up all over Europe during the next three centuries. It would be idle to expect under the circumstances any mention of the pioneer Society of Scientific Physicians (Schweinfurt, 1652), the Paris medical society (1776), the medical societies in Boston (1735, 1780), New York (1749, 1769), Philadelphia (1765), New Hampshire (1784) and South Carolina (1789), the societies in London for the improvement of medical knowledge (1782) and medical and surgical knowledge (1783), the Lyceum Medicum (1785), the Abernethian Society (1795) and that most exclusive Medical Society (1749) gathering around William Hunter. It would be easy to advance criticisms and point out slips, which are almost unavoidable in works calling for so much tedious research and rechecking. The first medical society in the United States was not the one organized in New Jersey. The dates given for the organization of the New Jersey and the Maryland societies as well as of several other societies are wrong. Most puzzling is the deficient information for Latin America. The medical organizations existing in Mexico under various names since 1732 and in Caracas (1827), Pernambuco (1841), Guatemala (1847), Bahia (1848), Montevideo (1850), Lima (1851, 1876) and, strangest of all, Buenos Aires itself (1822, 1874) are all overlooked. The earliest ophthalmologic organization in the world is not the Deutsche Gesellschaft but the International Ophthalmologic Congress (1857), the term congress being preferred to society, also suggested at the time. Incidentally, international societies, worthy of a chapter to themselves, receive but scanty attention and congresses, usually their most important manifestation, none at all. The membership in American medical organizations is actually much larger than given, and ophthalmologic societies number more than thirty-three in the world and definitely more than seven in the United States. In a number of cases the earliest societies are not those given as such but others now incorporated or fused. Indexes are sadly lacking, and a good model might be found in the more elaborate compilations of the Russell Sage Foundation, the League of Nations and the National Academy of Sciences. One might go on picking errors in other parts of the book, but this is not necessary nor would it serve any useful purpose. A monograph of this nature must be accepted as the author perhaps intended it, as a sort of preliminary sketch to be enlarged, corrected and improved through the further effort of all interested. It is indeed preeminently a joint, not individual, and time consuming task. The medical profession should altogether welcome this panoramic, if incomplete, view of its collective activities and history.

Universal Diet Calculator of Approximate Food Values: Carbohydrate, Protein, Fat and Calories. By G. G. Geddes. Portland, Oregon: The Author, 1939.

This device is intended as a convenience in calculating quantitative diets, particularly the carbohydrate-restricted diet. Values are given for the approximate protein, fat, carbohydrate and calory content of seventy-six foods, including nine fats, thirty-four proteins and thirty-three so-called higher carbohydrate foods. With a few exceptions, foods representative of the average American diet have been selected. Fish is overemphasized at the expense of the usual cuts of beef, pork, lamb and other meats. In some instances values for individual brands of products such as bases for chocolate-flavored beverages, cheese and oleomargarine are given rather than values representing such foods as a class. The values for the average composition of the foods selected appear to have been derived largely from the food tables included in the Compilation of Diets published by the California Dietetic Association (Spanish American Institute Press, Gardena, Calif., 1932) but the source of this material is not acknowledged. Frequently, important information has been omitted. In the case of eggs, bananas, nuts and other foods in which the shell or rind may constitute a considerable portion of the weight as purchased the chart does not indicate whether the values given represent the edible portion or the food as purchased. Further, the chart does not specify that the canned fruits listed among the foods containing 6, 9, 12 and 15 per cent of carbohydrate are packed in water, not in the usual sugar syrup, and that the soybeans which are classified as a vegetable containing 6 per cent of carbohydrate are green shelled beans, not dried beans. Other inaccuracies noted are that avocados, various nuts, peanut butter and olives have been incorrectly classified as foods high in carbohydrate and that the protein content of a number of foods has not been correctly stated. Baked beans and kidney beans, for example, contain approximately 7 per cent of protein, not 2.5 per cent, as indicated on the chart. These are serious errors where carbohydrate-restricted diets are concerned. However, if all serious inaccuracies could be eliminated, the device might serve as a useful tool in the rapid estimation of many quantitative diets.

Sanitization of the Drinking Glass. Part I: Methods and Procedures. By Jack G. Baker, Chief, Bureau of Foods and Drugs, Department of Public Health, San Diego, California. Part II: Practical Control. By Raymond V. Stone, D.V.M., Director, Bureau of Laboratories, Department of Public Health, Los Angeles County, California. Paper. Pp. 60, with 9 illustrations. Los Angeles: National Association of Sanitarians, Inc., 1938.

This booklet starts with the coining of a word, "sanitization," based on the word sanitize, meaning to make sanitary. It deals with the problem of sanitation as affected by trade practices in handling dishes, especially drinking glasses. It deals with means of sanitization, such as hot water, heat, lye and other caustics and chlorine preparations, with the equipment for their use and with such dish-washing equipment as sinks, drainboards, brushing devices, soaps and detergents, and towels. A chapter is devoted to chlorine preparations and another to inspectional procedures. Brief consideration is given to the value of individual paper service utensils with an amusing, though sufficiently pertinent, side light on the danger of allowing customers to have possession of bottles, especially at baseball games, prize fights and other events where crowds congregate. Suggested laws and ordinances are considered. The second part of the booklet deals with practical control measures, with special reference to washing temperatures, handling of clean glassware, different types of disinfecting methods, solutions and equipment. There is an extensive bibliography. The book should be useful to health officers, to industrial physicians, to restaurant, hotel and refreshment stand operators and to the field inspection personnel charged with the responsibility of keeping eating places sanitary.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Services: Municipality's Right to Provide Health Service System for Employees.—By a charter amendment, the city of San Francisco undertook to provide a system of health service for its employees. A health service board was authorized to adopt a plan for providing medical care to the members of the system and to determine and certify to the controller the monthly sum to be deducted from the pay of members. Members of the service were permitted to select their own physicians, "subject to the rules and regulations of the board" and subject to a provision that the services or supplies must be furnished "at uniform rates of compensation to be fixed by the board." The health service board adopted a plan whereunder the sum of $2.50 was determined as the monthly deduction to be made from the pay of members of the system. The board duly certified to the controller the amount to be deducted and the deductions were made. The controller, however, refused to make the funds available to the board until the legality of the charter amendment was determined. The treasury of the City and County of San Francisco likewise refused to make disbursements of funds for the same reasons. The board thereupon petitioned the Supreme Court of California for a writ of mandate to compel the controller and the treasurer to make available to the board the funds deducted from the pay of employees.

Whether or not the city could lawfully provide for a health service system for its employees, said the Supreme Court, depended on whether such system was a "municipal affair" within the meaning of the constitution of California, which declares a municipality to be supreme in the field of "municipal affairs." Proper medical attention, freely available to municipal employees and their dependents, should, the court pointed out, have a direct and beneficial effect on their health, and therefore on their efficiency. If a pension or retirement system or provision for sick leave payments at the expense of the municipality is within the municipal power, the present plan, entirely self supporting and having a tendency to decrease sickness and lessen the expense of sick leave, must equally be so. The court thought therefore that the service did constitute a "municipal affair."

It was contended by the defendants that the charter set up no standard to determine what constituted "adequate medical care" as that term was used in the provision exempting from the operation of the health service system employees who had otherwise provided for "adequate medical care." In the opinion of the court, however, the term was clear enough. The charter defined the term "medical care" to include the services of physicians, surgeons, nurses, persons licensed to treat human diseases without the use of drugs, hospitalization, medicines and appliances and dental, optical and other medical treatment and services. In view of the great complexity and rapid changes in medical science, the court thought it to be neither desirable nor possible to set forth in a statute any detailed outline of particular services. Details must be left in such circumstances to the expert administrative board or officer chosen to carry out the legislative direction. It was contended, too, that the charter provision was in conflict with the state insurance code in that it authorized what was in effect an insurance business without a certificate of authority from the insurance commissioner and that the subject of insurance was of statewide concern and not a municipal affair. Although insurance, the court pointed out, may be a matter of general concern, the health and efficiency of city employees is a municipal affair and a plan established by charter to safeguard the health, peace of mind and working efficiency of such employees is validly applied to them, although it might be entirely improper if applied to objects beyond the scope of municipal power. Furthermore, the insurance code deals with the private business of insurance and neither expressly nor impliedly purports to regulate governmental activities of municipalities. It is a well settled doctrine that general words in a statute which might have the effect of restricting governmental powers are to be construed as not applying to the state or subdivisions. These same considerations, the court continued, disposed of the further contention that the charter permitted the board to practice medicine in violation of the state medical practice act.

It was further contended that the charter amendment was unconstitutional in providing for a compulsory deduction in an uncertain amount from the pay of municipal employees. But, replied the court, no one has a vested right in his public employment except in so far as the right is conferred by statute or other valid regulation. Employment is accepted under the terms and conditions fixed by law and one of the terms of the employment in the present case was the provision for the benefits of the health service system at the charge imposed therefor. The deduction had none of the compulsory features of a tax, for no one was compelled to pay anything, unless he voluntarily sought public employment under the terms and conditions which the law imposed. The right conferred on the health service board to exclude those employees receiving salaries of over $4,500 a year, in the opinion of the court, was based on the reasonable legislative determination that such persons may be able to provide themselves with sufficient medical care. Likewise, the exemption of those who relied on healing by prayer was designed to avoid interference with the free practice of religion. The exemption of those who already had adequate medical care avoided the arbitrary imposition of the facilities of the system on those who already had provided for equal facilities from another source. The city, furthermore, had a right to include in the system the school teachers and others employed by the school district.

It was finally contended that some of the rules and regulations and practices of the board were, or might be, arbitrary or discriminatory with respect to particular persons. The court thought that there was no reason to consider such a contention, for the only issue before the court was whether the charter amendment and the plan adopted thereunder were valid. If, the court pointed out, in the performance of the duties devolved on the board the rights of any individuals are infringed, the regular procedure of the courts is available to test the action.

The Supreme Court, therefore, issued the writ of mandate prayed for, compelling the controller and treasurer of the City and County of San Francisco to make available to the board the funds deducted from the pay of the employees who were members of the health service system.—*Butterworth et al., Health Service Board of City and County of San Francisco v. Boyd, Controller, et al. (Calif.), 82 P. (2d) 434.*

Society Proceedings

COMING MEETINGS

American Association for the Study of Neoplastic Diseases, Washington, D. C., Sept. 7-9. Dr. Eugene R. Whitmore, 2139 Wyoming Ave. N.W., Washington, D. C., Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va., Sept. 7-9. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.

American Association of Railway Surgeons, Chicago, Sept. 11-13. Dr. Daniel B. Moss, 547 West Jackson Blvd., Chicago, Secretary.

American Congress of Physical Therapy, New York, Sept. 5-8. Dr. Richard Kovacs, 2 East 88th St., New York, Secretary.

American Roentgen Ray Society, Chicago, Sept. 19-22. Dr. Carleton B. Peirce, Royal Victoria Hospital, Montreal, Can., Secretary.

Idaho State Medical Association, Boise, Aug. 23-26. Dr. J. N. Davis, 204 Fourth Avenue East, Twin Falls, Secretary.

Kentucky State Medical Association, Bowling Green, Sept. 11-14. Dr. Arthur T. McCormack, 620 South Third St., Louisville, Secretary.

Michigan State Medical Society, Grand Rapids, Sept. 18-22. Dr. L. Fernald Foster, 311 Center Ave., Bay City, Secretary.

Mississippi Valley Medical Society, Burlington, Iowa, Sept. 27-29. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.

National Medical Association, New York, Aug. 14-18. Dr. John T. Givens, 1108 Church St., Norfolk, Va., General Secretary.

Nevada State Medical Association, Reno, Sept. 22-23. Dr. Horace J. Brown, 120 North Virginia St., Reno, Secretary.

North Pacific Society of Internal Medicine, Vancouver, B. C., Sept. 1-2. Dr. Lester J. Palmer, 1115 Terry Ave., Seattle, Secretary.

Oregon State Medical Society, Gearhart, Sept. 6-9. Dr. M. L. Bridgeman, 1020 S.W. Taylor St., Portland, Secretary.

Rocky Mountain Medical Conference, Salt Lake City, Sept. 5-7. Mr. W. H. Tibbals, 610 McIntyre Bldg., Salt Lake City, Secretary.

Utah State Medical Association, Salt Lake City, Sept. 5-7. Dr. D. G. Edmunds, 610 McIntyre Bldg., Salt Lake City, Secretary.

Washington State Association, Spokane, Aug. 28-30. Dr. V. W. Spickard, 1305 Fourth Ave., Seattle, Secretary.

Wisconsin, State Medical Society of, Milwaukee, Sept. 13-15. Mr. J. G. Crownhart, 119 East Washington Ave., Madison, Secretary.

Wyoming State Medical Society, Salt Lake City, Utah, Sept. 5-7. Dr. M. C. Keith, 156 South Center St., Casper, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1929 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Cancer, New York

36: 1-178 (May) 1939

Ewing's Tumor Simulating Sarcoma of Soft-Tissue Origin: Clinical, Pathologic and Radiotherapeutic Study of Four Cases. H. Potozky and J. R. Freid, New York.—p. 1.

Metastasis to Central Nervous System from Carcinoma of Lung. W. M. Craig, H. W. Woltman and J. W. Kernohan, Rochester, Minn.—p. 12.

*Painful Subcutaneous Tubercle (Tuberculum Dolorosum). A. P. Stout, New York.—p. 25.

Transmissible Monocytoma of the Mouse. Margaret Reed Lewis, Washington, D. C.—p. 34.

Breast Cancer in Mice. J. J. Bittner, Bar Harbor, Maine.—p. 44.

Influence of Dinitrokresol on Development of Tar Tumors in Mice. L. Kreyberg, Oslo, Norway.—p. 51.

Effects of Transplants of Anterior Lobes of Hypophysis on Growth of Mammary Gland and on Development of Mammary Gland Carcinoma in Various Strains of Mice. L. Loeb and Marian Maskop Kirtz, St. Louis.—p. 56.

Mortality from Cancer of Skin in Relation to Mortality from Cancer of Other Sites: Analysis of Occupational Mortality Statistics of England and Wales. Kitty K. Conrad and A. B. Hill, London, England.—p. 83.

Reactions of Carcinogenic and Related Compounds with Cellular Constituents: I. Interactions of Polycyclic Hydrocarbons with Cholesterol, β-Dihydrocholesterol and Ergosterol in Surface Films. G. H. A. Clowes, W. W. Davis and M. E. Krahl, Indianapolis.—p. 98.

Painful Subcutaneous Tubercles.—Stout reviewed the records of 2,081 cases of cutaneous and subcutaneous tumors and cysts in order to determine in what types of neoplasm paroxysmal pain occurs and thus be properly classified as tubercula dolorosa. Among them there were twenty in which the tumors had occasioned paroxysmal pain. Nine of these were glomus tumors and four were solitary leiomyomas. The other seven were multiple cavernous hemangiomas, venous hemangioma, multiple neurofibromas, fibrosarcoma, keloid, dermoid cyst and a fibroma associated with a benign epithelioma type of sebaceous cyst, both of which were accompanied by paroxysmal pain. Forty other cases of severe pain were found, but the pain was not of a paroxysmal character and it was unassociated with infection. Eighteen different tumors represented this second group. There were also 202 cases in which moderate pain or tenderness was listed. An analysis of the tissues composing the various tumors of the group associated with paroxysmal pain shows that in the majority of them there are found one or more of three tissue types: smooth muscle, blood vessels and nerves.

American J. Digestive Diseases, Huntington, Ind.

6: 233-304 (June) 1939

Contributions Made in 1938 to Knowledge in Regard to the Pancreas. R. Elman, St. Louis.—p. 233.

Roentgen Diagnosis of Early Enlargement of Head of Pancreas. M. Feldman, Baltimore.—p. 237.

Roentgenologic Consideration of Colopathies Associated with Gallbladder Disease. M. Feldman, Baltimore.—p. 238.

Biophotometric Studies in Thirty Cases of Chronic Ulcerative Colitis. H. H. Lerner, Boston, and H. G. Rapaport, New York.—p. 239.

Effect of Certain Parenterally Administered Drugs on Colon of the Dog. L. H. Wolff, Rochester, Minn.—p. 243.

Concentration of Pancreatic Enzymes in Duodenum of Normal Persons and Persons with Disease of Upper Part of Abdomen. M. W. Comfort, R. L. Parker and A. E. Osterberg, Rochester, Minn.—p. 249.

Relation of Constipation to Cancer. J. L. Kantor, New York.—p. 254.

Chronic Regional Enteritis Occurring in Three Siblings. P. W. Brown and C. H. Scheifley, Rochester, Minn.—p. 257.

Gastric Secretion in Extragastric Malignancy. H. Necheles and M. Appel, with assistance of D. Wald and W. Olson, Chicago.—p. 261.

Gastrointestinal Onset of Pulmonary Tuberculosis. H. Gauss, Denver.—p. 263.

Control of Gastric Hyperacidity by Magnesium Trisilicate. C. G. Reid, Charlotte, N. C.—p. 267.

Studies in Human Biliary Physiology: II. Effect of Food Factors and Orally Administered Bile on Rate and Quantity of Bile Secretion. M. Jacobi, I. C. Zuckerman and B. Kogut, Brooklyn.—p. 270.

American Journal of Diseases of Children, Chicago

57: 1223-1484 (June) 1939

Adsorption of Methylene Blue by Blood of Infants and Children: Mechanism of Reaction and Clinical Application. C. H. Smith, New York.—p. 1223.

*Intracutaneous Tests for Determining Susceptibility to Whooping Cough. Mary Knott Bazemore and J. C. Williams, Philadelphia.—p. 1246.

Postmeasles Encephalitis. M. G. Peterman and M. J. Fox, Milwaukee.—p. 1253.

Papulonecrotic Tuberculosis in Children. J. C. Bernstein, Baltimore.—p. 1260.

*Evaluation of Tuberculin Patch Test (Vollmer-Lederle). H. Vollmer, New York, and Esther W. Goldberger, Staten Island, N. Y.—p. 1272.

Blood Calcium and Phosphorus in the Newborn. W. R. Todd, E. G. Chuinard and M. T. Wood, Portland, Ore.—p. 1278.

Cutaneous Reactions to Tobacco Antigen in Allergic and in Nonallergic Children with Direct and Indirect (Local Passive Transfer) Methods of Testing. M. M. Peshkin, New York, and L. H. Landay, Pittsburgh.—p. 1288.

Acute Empyema of Chest in Children: Review of 300 Cases. L. A. Hochberg and B. Kramer, Brooklyn.—p. 1310.

Cyanosis from Use of Sulfanilamide. J. A. Bigler and Marie Werner, Chicago.—p. 1338.

Dental Caries Among Eskimos of Kuskokwim Area of Alaska: III. Dietary Study of Three Eskimo Settlements. T. Rosebury and M. Karshan, with technical assistance of Clare Lowenberg, New York.—p. 1343.

Hospital Infections: II. Nasopharyngeal Flora and Disease of Respiratory Tract in Infants. A. P. Long, C. F. McKhann and Lucile L. Cheney, Boston.—p. 1363.

*Prognosis of Glomerular Nephritis in Childhood. A. W. Snoke, Rochester, N. Y.—p. 1373.

Development of Pediatrics and of Pediatric Training in Sweden. I. Jundell, Stockholm, Sweden.—p. 1411.

Observation of Growth of Children in Pediatric Practice. H. C. Stuart, Boston.—p. 1417.

Whooping Cough.—In investigating the reliability of cutaneous tests for determining the susceptibility of a child to whooping cough, Bazemore and Williams found no evidence to indicate whether a subject is susceptible or immune to whooping cough. Results of the tests made after treatment with pertussis vaccine showed no routine correlation and there was no specific variation from the reactions obtained before such treatment. There was nothing to suggest that a state of allergy developed after treatment with Sauer's vaccine.

Value of Tuberculin Patch Test.—Vollmer and Goldberger report their experience on the reliability of their tuberculin test (Vollmer-Lederle), using a stronger tuberculin than that of two years ago. They wished to determine, by a comparative study of 678 children, whether or not the patch test can be safely substituted for the Mantoux test. None of the children who showed a positive reaction to the Mantoux test with 0.1 mg. of old tuberculin failed to react simultaneously to the patch test. There were even more positive reactors to the patch test than to the Mantoux test. Therefore it seems that the Mantoux test can be replaced by the tuberculin patch test, at least as the first test. Higher concentrations of tuberculin must later be applied intracutaneously in order to rule out completely any tuberculous infection. The patch test might be preferable to the Mantoux test as the first diagnostic measure. The disagreeable local, focal and constitutional reactions that occasionally result from the Mantoux test did not follow the patch test. The authors suggest the following routine for tuberculin testing: 1. The tuberculin patch test is applied and read two days after the patches are removed. 2. Negative reactors to the patch test are retested with the Mantoux test with 1 mg. (0.1 cc. of a 1:100 solution) of old tuberculin or second strength solution (0.005 mg.) of purified protein derivative. 3. Since higher concentrations of tuberculin occasionally cause pseudopositive reactions, both tests are repeated if there is any discrepancy. If the discrepancy remains, the Mantoux reaction is regarded as the deciding one.

Prognosis of Glomerular Nephritis.—A follow-up study of 146 children with glomerular nephritis was made by Snoke in the children's clinic of the University of Rochester School of Medicine from 1926 to 1937. He compares his results with those of a similar study of 178 cases observed from 1920 to 1936 at the Stanford Medical School. A higher percentage of children recovered from glomerular nephritis in the author's Rochester series than in the San Francisco series. He states that the percentage of dead and chronically nephritic patients in the Stanford series was much greater than that in the

Rochester series and suggests sampling and a geographic difference in the clinical manifestations of glomerular nephritis as possible explanations for the differences in the prognosis of the two series.

American J. Obstetrics and Gynecology, St. Louis

37: 913-1092 (June) 1939. Partial Index

*Pituitary Gonadotropic Extracts for Treatment of Amenorrhea, Menorrhagia and Sterility. R. E. Campbell and E. L. Sevringhaus, Madison, Wis.—p. 913.

Variations of Lipoid Content in Certain Ovarian Tumors. R. B. Greenblatt, Augusta, Ga.; J. P. Greenhill, Chicago, and W. R. Brown, Augusta, Ga.—p. 929.

Daily Gonadotropic Hormone Tests During Fifty Complete Menstrual Cycles. F. E. D'Amour, Dorothy Funk and Helen Liverman, Denver.—p. 940.

Etiology and Treatment of Endocervicitis and Cervical Erosions. A. Wollner, New York.—p. 947.

Hormone Factors in Toxemias of Pregnancy, with Special Reference to Quantitative Abnormalities of Prolan and Estrogens in Blood and Urine. H. C. Taylor Jr. and E. N. Scadron, New York.—p. 963.

Fetal and Neonatal Disease and Death. F. L. Adair and Edith L. Potter, Chicago.—p. 993.

Induced Hyperglycemia at Delivery: Its Effect and Clinical Application. Rose C. Ketteringham, Cleveland, and B. R. Austin, Pittsburgh.—p. 1000.

*Therapeutic Value of Low-Dosage Irradiation of Pituitary Gland and Ovaries in Functional Menstrual Disorders and Sterility. C. Mazer and G. Baer, Philadelphia.—p. 1015.

The Postmature Fetus. J. Casagrande, Brooklyn.—p. 1028.

Diabetes in Pregnancy with Observations in Twenty-Eight Cases. M. M. Shir, Brooklyn.—p. 1032.

Management of Institutional Outbreak of Infectious Diarrhea of the Newborn Infant. R. L. Roddy, J. S. Forrester and H. Landow, Philadelphia.—p. 1037.

Treatment of Amenorrhea, Menorrhagia and Sterility.—After using pituitary gonadotropic extracts for seven years, Campbell and Sevringhaus report the results which may be expected in treating women for primary or secondary amenorrhea, menorrhagia, irregularity of menstrual cycles and for relief of sterility. All the syndromes discussed are considered to be the result of underactivity of ovarian hormones, dependent presumably on underactivity of the anterior pituitary in supplying gonadotropic substance. For accurate diagnoses and conduct of treatment the endometrial biopsy, vaginal epithelial samples secured by pipet and pregnandiol determinations in urine are important aids. If these aids fail to show definite response to treatment, even though menstruation occurs at fairly regular intervals, the treatment may well be increased or abandoned. The use of long series of repeated daily doses, extending for from five to fifteen days at the beginning of each menstrual cycle, seems necessary and appears to be safe. Results are not achieved in a single month. Treatment should be individualized. Timing of the therapy is of especial importance. The authors have been convinced that the sharp increase in the secretory action of the follicle occurs at about the onset of menstruation. Therefore they adopted the onset of flow as the optimal time at which to begin using the gonadotropic factor when follicle stimulation was the objective. Since there is increasing certainty that in a fertile twenty-eight day cycle ovulation occurs on about the fourteenth day, they attempted to concentrate the therapy in the first fourteen days. Examples of success, partial success and failure of the syndromes treated are cited.

Irradiation of Pituitary and Ovaries for Menstrual Disorders and Sterility.—Mazer and Baer state that low dosage irradiation of the pituitary and ovaries resulted in the restoration of the menstrual function in 59 per cent of 106 cases of amenorrhea, 89 per cent of eighteen cases of dysfunctional metrorrhagia during the childbearing age and 57 per cent of twenty-six cases of dysfunctional menorrhagia. It had no effect in three cases of hypomenorrhea. The amenorrhea of two patients was presumably aggravated by the treatment. Low dosage irradiation of the pituitary and ovaries of twenty-six women with normal menstrual cycles resulted in temporary amenorrhea of one who, however, had in the past shown a tendency to amenorrhea. Low dosage irradiation of the pituitary and ovaries was highly effective in sterility of women with functional menstrual disorders (fourteen of twenty-nine sterile women conceived) but had little if any effect on those who menstruate normally.

Annals of Internal Medicine, Lancaster, Pa.

12: 1739-1916 (May) 1939

In the Spirit of Service. W. J. Kerr, San Francisco.—p. 1739.

Chronic Idiopathic Hypoparathyroidism: Report of Six Cases with Autopsy Findings in One. T. G. Drake, St Louis; F. Albright, W. Bauer and B. Castleman, Boston.—p. 1751.

Essential Hypertension and Chronic Hypertensive Encephalopathy: Clinicopathologic Study. C. Davison and N. Q. Brill, New York.—p. 1766.

*Hemolytic Jaundice and Macrocytic Hemolytic Anemia: Certain Observations in Series of Thirty-Five Cases. C. J. Watson, Minneapolis.—p. 1782.

*Clinical Study of Etiology of Obesity. J. A. Greene, Iowa City.—p. 1797.

Medicolegal Problems of Hypoglycemic Reactions in Diabetes. D. Adlersberg and H. Dolger, New York.—p. 1804.

Specific Serotherapy and Chemotherapy of Pneumococcic Pneumonias. M. Finland, W. C. Spring Jr., F. C. Lowell, Boston, and J. W. Brown, San Francisco.—p. 1816.

Recent Advances in Treatment of Pellagra and Associated Deficiencies. T. D. Spies, W. B. Bean and W. F. Ashe, Cincinnati.—p. 1830.

Atrophy and Necrosis of Liver Without Jaundice. J. F. Weir, Rochester, Minn.—p. 1845.

Action of Parahydroxyphenylisopropylamine (Paredrine) on the Heart: Clinical Study of New Epinephrine-like Compound. M. H. Nathanson, Los Angeles.—p. 1855.

Tolerance and Toxicity of Insulin: III. Protamine and Zinc Compounds. F. M. Allen, New York.—p. 1870.

Hemolytic Jaundice and Macrocytic Hemolytic Anemia.—During the last six years Watson observed thirty-five patients exhibiting evidence of hemolytic anemia or jaundice. There were twenty cases of the microcytic (familial or congenital) type and fifteen of the macrocytic (secondary or acquired) type. In two of the latter group hemolytic anemia persisted in spite of removal of associated pathologic conditions which might have been considered causal; in one of these cases splenectomy later resulted in cure. Of most significance in distinguishing the familial or congenital from the secondary or acquired type is the predominance of microcytes in the former and of macrocytes in the latter. This distinction should depend on measurement of the average diameter of the erythrocytes and not on the simple inspection of the blood smears. Increased fragility was uniformly encountered in the congenital type but was also observed in two of the patients with hepatic disease who had macrocytosis and increased blood destruction. Autohemagglutination was observed in two cases of macrocytic hemolytic anemia but in none of the cases of the familial variety. Jaundice and anemia were not found to increase in parallel fashion. Except for periods of hemolytic "crises" the opposite tendency was observed. Generally the more jaundiced patients were the least anemic; in fact, the most jaundiced patient was the least anemic, whereas the most anemic individual was not jaundiced. This suggests that a sluggish bilirubin excretory function of the liver, instead of being detrimental, may actually be of benefit in tending to prevent anemia. Increase in circulating erythrocytes, which is often observed immediately after splenectomy, may be produced with epinephrine in hemolytic jaundice before splenectomy. After operation the effect was not obtained.

Etiology of Obesity.—Greene discusses the alterations in caloric intake or caloric requirement during gain in body weight in obese patients, the incidence of evidence of ovarian dysfunction, the relationship of change in body weight to the onset of certain diseases of the hypothalamus, thyroid and pituitary, and the ability of obese patients to lose body weight when low caloric diets are followed. Cases of myxedema, pituitary tumor and chronic encephalitis were selected because corpulence in these diseases is usually cited in support of the contention that alteration of the secretions of the thyroid and the pituitary glands or lesions in the hypothalamus are etiologic factors in obesity. Lesions of the hypothalamus may occur in suprasellar tumors and diabetes insipidus; cases of each are included. The records of 350 cases of obesity, of which about a third were observed by the author, are analyzed by him. Sufficient data were available regarding the food intake and activity during the gain in body weight in 154 cases. Gain in weight was associated with pregnancy or pregnancies without a history of increase in food intake or diminished activity in thirty-two instances. Most of these patients gained from 15 to 25 pounds with each pregnancy, maintained the added weight, and thus became obese after from three to six pregnancies. There were thirteen patients who were either always obese or became obese without a history of change in activity or food intake. The

gain in body weight which occurred simultaneously with diminished activity in 104 instances was accounted for in five cases by change in occupation and in ninety-nine by a long illness, disability or convalescence. Of 300 women, sufficient data regarding menstruation were available for 289. The menses of 143 were normal. Forty-eight had passed the menopause, but the obesity began several years prior to the menopause and the menses had been normal during that time. Ovarian dysfunction could be excluded as an etiologic factor in the adiposity in 191 cases. Obesity began before puberty in five cases, but menstruation was normal. Adiposity began after the menopause in fifteen instances and antedated it in two. Menstruation was irregular in thirty-four cases, absent in thirteen, scanty in five, painful in seven and excessive in seven. Although the incidence of obesity in myxedema, pituitary tumor, chronic encephalitis, suprasellar tumor and diabetes insipidus is high, it was present in most cases before the onset of the other malady. Patients with myxedema, pituitary tumor or chronic encephalitis became either more or less obese; that is, as many patients lost weight as gained weight after the onset of myxedema and pituitary tumor, and loss of weight was five times more prevalent than gain in weight after the onset of chronic encephalitis. Low caloric diets were known to have been followed for an adequate time by 146 patients, and all of them lost body weight satisfactorily. The patients who lost weight on low caloric diets included those who had various menstrual disturbances, those who became obese from unknown causes and those who became corpulent with pregnancy, illness, operation, myxedema, pituitary tumor, chronic encephalitis and increased food intake. Adiposity developed in association with thirty-six different diseases or disabilities in the patients known to have lost weight satisfactorily. Inactivity occurred simultaneously with gain in body weight in 67.5 per cent. A history of an increase in food intake was obtained in only 3.2 per cent.

Archives of Ophthalmology, Chicago

21: 913-1086 (June) 1939

Instruments and Technics for Clinical Testing of Light Sense: I. Review of Recent Literature. Louise L. Sloan, Baltimore.—p. 913.
Angioid Streaks. A. Hagedoorn, Amsterdam, Netherlands.—p. 935.
Reduction of Postoperative Complications in Cataract Operations with Corneoscleral Sutures. V. M. Leech and H. S. Sugar, Chicago.—p. 966.
*Treatment of Diseases of Eye with Grenz Rays. R. L. Pfeiffer, New York.—p. 976.
Marked Anisometropia: Report of Case in Which Full Correction Was Accepted. F. L. P. Koch and A. deH. Prangen, Rochester, Minn.—p. 987.
Significance of False Projection in Treatment of Squint. Mildred I. Smith, Baltimore.—p. 990.
Occurrence of Vertical Anomalies Associated with Convergent and Divergent Anomalies: Clinical Study. J. W. White and H. W. Brown, New York.—p. 999.
Paralysis of Extra-Ocular Muscles: Clinico-Anatomic Considerations: Report of Cases of Paralysis of Oculomotor and Abducens Nerves Due to Unusual Causes. J. C. Yaskin, Philadelphia.—p. 1010.
Contact Glasses for Correction of Refractive Errors in Monocular Aphakia: Production of Binocular Single Vision. A. E. Town, New York.—p. 1021.
Creatine and Creatinine of Ocular Tissues. A. C. Krause and F. W. Tauber, Chicago.—p. 1027.
Arrests in Embryologic Development as Factors in Vision: Brief Review of Embryology of Eye with Associated Anomalies of Arrested Development. D. J. Lyle, Cincinnati.—p. 1037.

Grenz Rays in Diseases of Eye.—Over a period of five years Pfeiffer used grenz rays in the treatment of 302 patients with superficial (surface) lesions of the eyeball, cornea, bulbar conjunctiva, episclera and sclera. The most striking response was observed in ulcers and infiltrates of the cornea, and in these instances there was convincing proof of the effectiveness of grenz rays. Thirty-two patients with various types of ulcers of the cornea were treated, and stimulation of healing was apparent in practically all catarrhal and small marginal ulcers in from one to four days. Trachomatous ulcers seemed to respond promptly. Dendritic ulcers were treated but the results were inconclusive. The next most impressive results were obtained in cases of episcleritis and scleritis. Of sixty such patients treated, benefit was observed in forty-eight, or 80 per cent. Six patients were not benefited in the least. Four patients with scleritis were treated, and all showed definite response. A great variety of types of nonulcerative keratitis were treated and constancy of results was not observed. Most of the twenty-nine patients with superficial punctate keratitis treated obtained relief from discomfort, the condition improved in a few and that of six cleared during the course of treatment. Five patients with superficial punctate keratitis were benefited but complete cure was not obtained. Six patients with phlyctenular keratitis were treated, and healing of the lesions which might be ascribed to the grenz rays was not observed. Six patients with epithelial dystrophy of the cornea were treated, and the vesicular lesions of the epithelium of two disappeared and after two years have not recurred. Two of the patients were perhaps benefited and two did not have full series of treatments. Four patients with herpetic keratitis experienced relief from symptoms. Three patients with disciform keratitis, two with sclerosing keratitis and three with band keratitis were not benefited. Thirteen patients with vascularized keratitis (parenchymatous involvement) were not uniformly benefited. Their distressing symptoms, however, were relieved in part, and in some instances the vessels were reduced in size. It is the author's opinion that grenz rays succeed in the treatment of surface lesions of the eye as well as other forms of irradiation and have the important factor of safety to commend them. It seems probable that grenz rays will replace other forms of radiant energy in their field of usefulness. Many variable factors remain for study, and much experimentation will have to be carried on before the maximal efficacy of grenz rays will be known.

Archives of Otolaryngology, Chicago

29: 881-1010 (June) 1939

Ethmoid Labyrinth: Anatomic Study, with Consideration of Clinical Significance of Its Structural Characteristics. O. E. Van Alyea, Chicago.—p. 881.
Research in Audition: The Next Steps: Experimental Findings and Their Clinical Aspects. W. Hughson and Eva Thompson, Abington, Pa.—p. 903.
Perforated Peptic Ulcer from Abscess of Brain of Otitic Origin: Report of Case. S. H. Baron, New London, Conn.—p. 919.
Torticollis Spastica: Suggested Etiologic Relation to Vestibular Apparatus: Report of Case. O. R. Hyndman, Iowa City.—p. 927.
Stapes, Fissula Ante Fenestram and Associated Structures in Man: II. From the Fetus at Term to the Adult of 70. B. J. Anson, J. E. Karabin and J. Martin, Chicago.—p. 939.
Nasopharyngeal Atresia: Description of Operation. H. M. Goodyear, Cincinnati.—p. 974.

Archives of Pathology, Chicago

27: 955-1106 (June) 1939

Accessory Adrenal Cortical Tissue. A. A. Nelson, Washington, D. C.—p. 955.
*Acute Postoperative Enterocolitis: Study on Pathologic Nature of Shock. A. Penner and Alice Ida Bernheim, New York.—p. 966.
Congenital Absence of Penis. G. J. Rukstinat and R. J. Hasterlik, Chicago.—p. 984.
Chronic Hypoglycemia: Report of Two Cases with Islet Adenoma and Changes in Hypophysis. N. B. Friedman, New York.—p. 994.
Observations on Lesions Produced in Arteries of Dogs by Injection of Lipids: Lipids Injected: Human Fat, Fatty Acids, Soaps and Cholesterol. O. O. Christianson, University, Ala.—p. 1011.
Venereal Lymphogranuloma. R. D'Aunoy and E. von Haam, New Orleans.—p. 1032.

Acute Postoperative Enterocolitis.—The chance observation of the sloughing of intestinal mucous membrane following radical mastectomy in a case of severe diabetes led Penner and Bernheim to inquire into the factors and mechanisms responsible for this phenomenon. They reviewed the postmortem records of the Mount Sinai Hospital and the literature for similar cases of acute postoperative enterocolitis. Search of the literature revealed but few reports made in sufficient detail to identify clearly the nature of the process dealt with. The postmortem records of the Mount Sinai Hospital for the last ten years disclosed forty cases in which necropsy revealed pseudodiphtheritic ulceronecrotic enteritis, colitis or enterocolitis. The selection of cases did not include those in which the mesenteric vessels were thrombosed or those in which a diffuse vascular disease was present. Intestinal diseases of known cause, such as typhoid and dysentery, were likewise excluded. In reconstructing the pathogenesis of the lesion, the authors find that the earliest change consists in marked distention of the capillaries and venules, first in the submucosa and subsequently in the mucosa. This is followed by marked submucosal edema and occasional focal hemorrhage in the vicinity of the distended vessels (diapedesis). The arterioles frequently appear to be contracted. The next change consists in focal necrosis of the mucosa, especially of the mucosal folds. With advance of the lesion the areas of mucosal necrosis spread and fuse and extend through varying depths of the intestinal wall,

although in most cases not beyond the submucosa. In the advanced stages the necrosis is accompanied by an inflammatory cellular reaction, and hyaline thrombi are seen in many of the smaller vessels. The lesion appeared consequent to operative procedures in the abdomen, as well as after lobectomy, and it appeared in patients who had not undergone any operative procedures but were suffering from extensive burns and gastrointestinal hemorrhage. The one condition present in all the cases was shock. A similar lesion follows experimental production of shock by a variety of methods.

Illinois Medical Journal, Chicago

75: 481-568 (June) 1939

Shall Organized and Scientific Medicine Continue Its Progress? S. E. Munson, Springfield.—p. 505.
Advantages of Physiologic Point of View in Medicine. R. W. Keeton, Chicago.—p. 510.
Progress in Ophthalmology. S. J. Meyer, Chicago.—p. 514.
Osteodystrophy: Osteomalacia Osteopetrosis (Marble Bones); Report of Several Cases. H. Olin, Chicago.—p. 517.
Radium in Treatment of Diseases of Skin. F. E. Simpson, J. E. Breed and J. S. Thompson, Chicago.—p. 521.
Venereal Disease Control Program of the Champaign-Urbana Public Health District. G. H. Gowen, Chicago.—p. 542.
Importance of Milk of Low Curd Tension in Infant Feeding. M. L. Blatt, Chicago.—p. 545.
Convulsions Under Anesthesia: Report of Four Cases. F. J. Jirka and F. C. Hofrichter, Chicago.—p. 549.
Clinical Observations of 2,000 Peptic Ulcer Cases. J. D. Milligan, Elgin.—p. 551.
Prontosil in Pyopneumothorax. L. Schlenker, St. Louis.—p. 555.
Acute Intestinal Obstruction from Biliary Calculi. E. L. Strohl and G. V. Pontius, Chicago.—p. 558.
Chronic Ulcerative Colitis. A. A. Goldsmith, Chicago.—p. 559.
Institutional Blood Banks. H. H. Goldstein, L. Olsman and J. V. Edlin, Chicago.—p. 562.

Indiana State Medical Assn. Journal, Indianapolis

32: 299-348 (June) 1939

Comparison of Typhoid Fever Twenty-Five Years Ago and Now—Its Incidence and Treatment. T. Z. Ball, Crawfordsville.—p. 299.
Amebiasis and Amebic Dysentery. R. H. Moser, Indianapolis.—p. 301.
Control of Typhoid Fever in the Army. D. G. Hilldrup, Indianapolis.—p. 304.
Malaria in Indiana. J. W. Jackson, Indianapolis.—p. 305.
Scabies, Body Lice and Ticks. L. A. Sandoz, South Bend.—p. 308.
Management of Abortion. F. W. Peyton, Lafayette.—p. 311.
Treatment of Undulant Fever with Sodium Cacodylate. H. C. Ragsdale, Bedford.—p. 314.
Spinal Anesthesia: Study of Series of Cases. P. T. Holland and H. S. Ramsey, Bloomington.—p. 314.
Erythroblastosis Faetalis. H. C. Kraft, Noblesville.—p. 317.
Roentgen Therapy in Inflammatory Disease. J. N. Collins, Indianapolis.—p. 322.

Journal of Investigative Dermatology, Baltimore

2: 81-150 (June) 1939

Cutaneous Sensitization Studies: II. Gross and Microscopic Changes in Ragweed and 2-4 Dinitrochlorobenzene Sensitization of Guinea Pigs, and in Poison Ivy Sensitization of Human Beings. J. E. Ginsberg, C. D. Stewart and S. W. Becker, Chicago.—p. 81.
List of Substances for Patch Testing and Concentrations To Be Employed. A. Rostenberg Jr. and M. B. Sulzberger, New York.—p. 93.
Skin Test in Lymphogranuloma Inguinale: II. W. Frei, New York.—p. 119.
Production of Positive Serologic Reactions in Rabbits; and Subsequent Reactions of Serologically Altered Animals to Inoculation with Treponema Pallidum. F. T. Becker, Duluth, Minn.—p. 125.
*Observations on Sensitivity to Poison Ivy. F. A. Simon and E. Lotspeich, Louisville, Ky.—p. 143.

Sensitivity to Poison Ivy.—Simon and Lotspeich discuss the origin and development of sensitivity to ivy, the effect of certain local applications on the clinical course of the lesions and the effect of parenteral injections of poison ivy extract on specific skin sensitivity as determined by contact tests made before and after the injections. They observed that sensitivity to poison ivy did not occur in all individuals exposed to strong poison ivy extract. The existence of a predisposing factor is postulated. This factor seems to vary in different individuals and perhaps in the same individual at different times. Local applications of three common therapeutic agents did not influence objectively the clinical course of the lesions. Cutaneous tests with serial dilutions of poison ivy extract, performed before and after a series of intramuscular injections of the concentrated extract, indicated that cutaneous sensitivity was not appreciably altered by injections of the small quantities used in these experiments.

Journal of Lab. and Clinical Medicine, St. Louis

24: 893-1008 (June) 1939

Nonstatistical Evaluation of Artificial Pneumothorax. P. H. Ringer, Asheville, N. C.—p. 893.
Hematologic Indexes in Normal and Anemic Patients: Triaxial Graphic Method. K. Kato, Chicago.—p. 899.
*Total, Differential and Absolute Leukocyte Counts and Sedimentation Rates of Healthy Adolescents 15 to 18 Years of Age. E. E. Osgood, R. L. Baker, Inez E. Brownlee, Mable W. Osgood, Dorothy M. Ellis and W. Cohen, Portland, Ore.—p. 905.
Biochemical Observations in Hypoglycemia Induced by Insulin: IV. Some Evidences of Blood Concentration in Hypoglycemia. E. F. Rosenberg, Rochester, Minn.—p. 913.
*Intramuscular Injection of Vitamin K. G. Cheney, San Francisco.—p. 919.
Lymphosarcoma of Mediastinum (Malignant Thymoma): Clinical and Pathologic Study with Case Report of a Child. E. J. Bomze and J. D. Kirshbaum, Chicago.—p. 928.
Experimental Nephritis Produced by Staphylococcus Toxin in the Dog. R. H. Rigdon, Nashville, Tenn.—p. 935.
*Alimentary Lipemia in Young Diabetics with Evidence of Liver Damage or Dysfunction: Note on Effect of Betaine Administration on Liver Function and on Alimentary Lipemia. R. C. Lowe, New Orleans.—p. 943.
Effect of Intravenous Injections of Magnesium Sulfate on Volume of Extremities. V. G. Haury, Philadelphia.—p. 951.
Ragweed Pollen: Artefact in Tissue Sections. E. G. Ebertz and W. C. Lobitz Jr., Cincinnati.—p. 952.
Culture of Human Marrow as Aid in Evaluation of Therapeutic Agents: Studies of Sulfanilamide and Related Compounds. E. E. Osgood, Portland, Ore.—p. 954.

Leukocyte Counts and Sedimentation Rates of Adolescents.—Osgood and his collaborators determined the total, differential and absolute leukocyte counts and sedimentation rates of healthy persons from 15 to 18 years of age. The data show that there is no significant difference with age or sex within this group. The results for the entire group are summarized in tables and it is seen that the most useful range of normal is not the extreme range but that range which will include about plus or minus three probable errors, or 95 per cent of healthy individuals. In other words, if a result in a person of this age group falls outside the range, there is less than one chance in twenty that it is normal for that person. The sedimentation rates form a skew curve, with the greater number of determinations falling in the lower rates. It is probable that the rate of 15 mm. in forty-five minutes, which includes 80 per cent of the results, represents the strict upper limits of normal and that the higher rates are due to mild chronic infection in the tonsils, teeth or sinuses not detectable in the routine physical examination.

Intramuscular Injection of Vitamin K.—Cheney points out that a single intramuscular injection of vitamin K in chicks with a prolonged blood coagulation time due to a diet deficient in vitamin K (fowl hemophilia) reduced the time to normal within one hour. This effect was paralleled, to an extent, by the intramuscular injection of 1 cc. of the same vitamin K into the right upper arm of a hemophiliac patient. The 1 cc. contained approximately 0.5 Gm. of the vitamin. The injection produced moderate tenderness and induration but no systemic reactions. The blood coagulation times were tested before the injection and hourly for three hours thereafter, then at six hours and then daily for four days. No significant change in the time of coagulation took place, although it was only one hour on the second day compared to an initial time of two hours and forty minutes. Therefore the author concludes that vitamin K may be safely injected into man in the same proportionate dose as in chicks but that no rapid reduction in the blood coagulation time occurs in human hemophilia as it does in vitamin K deficiency in fowls. In a subsequent experiment in the same patient the coagulation time was reduced to normal (ten minutes) within the ten days following the injection of 0.7 mg. of vitamin K in sesame oil. As this patient's blood had been examined a number of times over a period of seven and a half years and the coagulation time had never previously been less than one hour, it is hardly likely that the development of a normal coagulation time for the first time was coincidental. No certain indications for its use have yet been established, but it may prove of value in cases of jaundice in which there is a tendency to bleed.

Alimentary Lipemia in Diabetes with Hepatic Damage.—Lowe studied the fat absorption curves in ten unselected young diabetic patients who showed definite evidence of hepatic dysfunction or damage and also the influence of a lipotropic

factor on these fat absorption curves and on hepatic function. All the patients studied were relatively refractory to control measures. Four patients showed elevated plasma bilirubin (from 1 to 2.2 mg. per hundred cubic centimeters). Six patients showed decreased excretion of hippuric acid (Quick). The livers of seven patients were enlarged two fingerbreadths or more below the costal margin. The postabsorption values of the total lipids fell within normal limits except in two cases. No correlation was found between the level or duration of elevation of the total blood lipids and the degree of hepatic damage indicated by several hepatic function tests. A study was made of the effect of betaine chloride therapy on the hepatic function, diabetic status and alimentary lipemia in this group of subjects. In all instances hepatic function was improved. A decrease of alimentary lipemia was associated with an improvement in the diabetes, whereas an increase of alimentary lipemia was associated with no significant alteration. A fundamental metabolic difference of some yet undefinable sort appears to exist which may account for the difference in response of these patients to both a "fat tolerance procedure" and betaine therapy for control of their diabetic state.

Journal of Nutrition, Philadelphia

17: 513-616 (June) 1939

*Study of Ascorbic Acid Intake Required to Maintain Tissue Saturation in Normal Adults. Wilma Beckman Belser, Hazel M. Hauck and Clara A. Storvick, Ithaca, N. Y.—p. 513.
Role of Riboflavin and Other Factors of Vitamin B Complex in Nutrition of the Pig. E. H. Hughes, Davis, Calif.—p. 527.
Determination of Curve of Response to Synthetic Crystalline Thiamin, for Use in Vitamin B_1 Assay of Foods by the Rat-Growth Method. C. D. Miller, Honolulu, Hawaii.—p. 535.
Production of Goiter in Rats with Raw and with Treated Soy Bean Flour. G. R. Sharpless, Janice Pearsons and Geneva S. Prato, Detroit.—p. 545.
Utilization of Calcium in Various Greens. Mary Speirs, Experiment, Ga.—p. 557.
Growth, Activity and Composition of Rats Fed Diets Balanced and Unbalanced with Respect to Protein. T. S. Hamilton, Urbana, Ill.—p. 565.
Heat Increments of Diets Balanced and Unbalanced with Respect to Protein. T. S. Hamilton, Urbana, Ill.—p. 583.
Study of Rachitogenic Diets Composed of Purified Food Materials. J. H. Jones, Philadelphia.—p. 601.

Ascorbic Acid and Tissue Saturation.—Belser and her co-workers describe a method for estimating the minimal intake of ascorbic acid which will just maintain the tissues in a state of complete saturation. They determined the requirement of seven subjects by this method and found that two required between 70 and 85 mg. of ascorbic acid to maintain tissue saturation, three required between 85 and 100 mg. and two required more than 100 mg. of ascorbic acid daily. On the basis of body weight the range in requirement to maintain complete saturation for these subjects was from about 1 to 1.6 mg. per kilogram daily.

Journal of Urology, Baltimore

41: 831-950 (June) 1939

Four Unusual Types of Renal Cyst. J. A. H. Magoun, Toledo, Ohio.—p. 831.
*Fatty Replacement Following Renal Atrophy or Destruction: So-Called Lipomatosis of the Kidney. F. C. Hamm and J. A. deVeer, Brooklyn.—p. 850.
New Aspects of Renal Physiology. H. W. Smith, New York.—p. 867.
Significance of Renal Torsion in Diagnosis of Retroperitoneal Tumors: Use of Lateral Pyelogram. H. M. Weyrauch Jr., San Francisco.—p. 877.
Urologic Hypertension: Study of 101 Cases. C. C. Maher and P. H. Wosika, Chicago.—p. 893.
Unilateral Chronic Pyelonephritis with Arterial Hypertension: Apparent Cure After Nephrectomy. D. W. McIntyre, Cleveland.—p. 900.
Uterovesical Fistula. G. C. Burr, Detroit.—p. 906.
Spindle Cell Sarcoma of Prostate: Review of Literature and Report of Case. G. J. Rukstinat and C. G. Weller, Chicago.—p. 911.
Hydrocele Penis. S. R. Woodruff, Jersey City, N. J., and H. S. Rupert, Greeley, Colo.—p. 919.
Use of Dry Cell Batteries, Rheostat and Voltmeter for Economy in Endoscopic Examinations. J. S. Binkley, New York.—p. 930.
Restoration of Continuity of Vas Deferens Eight Years After Bilateral Vasectomy. H. B. Freiberg and H. O. Lepsky, Cincinnati.—p. 934.

Fatty Replacement Following Renal Atrophy or Destruction.—Fatty replacement of the kidney, a condition heretofore reported as a rare entity, is in the opinion of Hamm and deVeer a frequent accompaniment of a variety of lesions leading to atrophy or destruction of renal tissue. They present six cases which illustrate mild, moderate and advanced grades of this condition. In five cases stones and infection were present. The remaining case is an instance representative of a large group of cases of senile atrophy with mild or moderate degrees of fatty replacement. In addition an example of tuberculosis of the kidney with extensive destruction of the parenchyma, accompanied by fatty replacement, is cited from the literature. Fatty replacement is not peculiar to the kidney. A similar process occurs in other organs undergoing atrophy. According to their observations, the authors point out that extensive fatty replacement of the kidney is encountered only in obese patients. It would appear that the process is one of hyperplasia of the adipose tissue normally present in the renal sinus and that this hyperplasia is not the cause of renal atrophy or destruction but is a secondary phenomenon which of itself is of little significance. Of the many descriptive terms suggested, "fatty replacement," as in "pyelonephritis with renal atrophy and fatty replacement," seems most fitting.

Laryngoscope, St. Louis

49: 323-422 (May) 1939

Allergy in Otorhinolaryngology and Ophthalmology: Review of Recent Current Literature. F. K. Hansel, St. Louis.—p. 323.
*Relationship of Paranasal Sinus Disease to Ocular Disorders: New Critical Method of Investigation by Laminagraphs. A. J. Cone, S. Moore and L. W. Dean, St. Louis.—p. 374.
Treatment of Fractures of Face and Nose. J. D. Whitham, New York.—p. 394.
Fractures of Skull Involving Temporal Bone. J. W. Fowlkes, New York.—p. 401.
Osteomyelitis of Skull. J. E. J. King, New York.—p. 405.

Laminagraphy in Sinus Disease and Ocular Disorders.—Cone and his associates believe that, if there is to be a proper evaluation of the relationship of sinus disease as a causative factor in any condition in which spontaneous recovery occurs as frequently as it does in retrobulbar neuritis or other ocular disorders, some critical method of demonstrating and following such patients must be used. Sinus disease was an important finding in five recent consecutive cases of ocular involvement. Laminagraphy of the sinuses permitted an evaluation of sinus conditions not possible by other methods and therefore the authors think that it should be used if there is to be a sincere effort in establishing the relationship of sinus disease to retrobulbar neuritis.

Michigan State Medical Society Journal, Lansing

38: 461-548 (June) 1939

Rudolf Virchow. R. C. Moehlig, Detroit.—p. 475.
Convulsions During Ether Anesthesia: Two Case Reports and Discussion. J. G. Slevin, Detroit.—p. 482.
Importance of Careful Environmental Studies in Allergic Patients. S. J. Levin, Detroit.—p. 486.
Industry in Relation to Paranoid Schizophrenia. C. L. R. Pearman, Detroit.—p. 488.
Problems in Severe Hyperthyroidism. W. G. Maddock, Ann Arbor.—p. 493.
Low Back Pain. H. E. Branch, Detroit.—p. 499.
Nervous Factors Involved in Skin Disturbances. M. G. Butler, Saginaw.—p. 501.
Congenital Deficiency of Pericardium. M. Kadin, Calumet.—p. 503.
Special Recognition of the General Practitioner. L. J. Gariepy, Detroit.—p. 506.
Priceless Progress But Deceptive. N. F. Miller, Ann Arbor.—p. 507.

Minnesota Medicine, St. Paul

22: 291-362 (May) 1939

Coronary Thrombosis Among Persons Less Than 40 Years of Age: Study of Thirty Cases. W. H. Goodson Jr. and F. A. Willius, Rochester.—p. 291.
Late Results of Thoracoplasty. H. A. Carlson, H. A. Burns and O. H. Wangensteen, Minneapolis.—p. 294.
Primary Carcinoma of Pancreas. J. Ohage, St. Paul.—p. 298.
*Postural Hypotension: Hourly and Daily Blood Pressure Variations. H. C. Browne and B. T. Horton, Rochester.—p. 302.
Value of Persistence in Treatment of Thrombo-Angiitis Obliterans: Report of Two Illustrative Cases. E. E. Wollaeger, E. V. Allen and R. K. Ghormley, Rochester.—p. 305.

Postural Hypotension.—Browne and Horton point out that a physical examination is never complete until the blood pressure has been recorded with the patient in the recumbent as well as in the erect position. Failure to carry out this simple procedure results in many patients going from physician to physician looking for help because of dizzy spells and weakness. Hourly and daily records of blood pressure in such a case tell

a graphic story. They report a case to emphasize the variations in blood pressure. From time to time cases have been reported in most of which the following phenomena have been exhibited: (1) a pronounced drop in systolic and diastolic blood pressure and syncopal attacks on changing from the recumbent to the upright position, (2) no increase in pulse rate with this drop in blood pressure, (3) decreased sweating and an inability to stand hot weather, (4) excretion of more urine at night than during the day, (5) a false appearance of youth, (6) a slightly low basal metabolic rate, (7) signs of slight changes in the nervous system and (8) concentration of blood urea at the upper limit of normal. Postural hypotension is not a disease but is an expression of inadequate control of the arterial system which may be associated with numerous diseases. As to its underlying cause, there are about as many hypotheses propounded as the number of cases reported. The conclusion is that the vasomotor system plays the predominant part in the decrease of blood pressure in the standing position. In the case that the authors report, not all of the characteristics mentioned were found. The marked fall in blood pressure, the syncopal attacks and the slow, unchanging pulse rate were present. Intravenous injection of ephedrine caused acceleration of the pulse. This showed that the normal function of the cardiac accelerator mechanism with a change in the blood pressure had not vanished. Instead of the inability to stand hot weather the patient suffered most during cold seasons. One of his most bothersome symptoms was excessive nocturnal urination. He possessed the false appearance of youth but not the characteristically low basal metabolic rate. A diminished vibratory sensation was the only sign of slight changes in the nervous system. The concentration of blood urea was in the higher limits of normal.

Nebraska State Medical Journal, Lincoln

24: 201-240 (June) 1939

Why Report Venereal Disease? E. G. Zimmerer, Lincoln.—p. 204.
Importance of Biopsy. E. C. Sage and C. P. Baker, Omaha.—p. 206.
Helps in Diagnosis of Syphilis. D. J. Wilson, Omaha.—p. 207.
Cardiovascular Syphilis. M. W. Barry, Omaha.—p. 211.
Ocular Foreign Bodies. W. N. Hahn, Omaha.—p. 215.
Pregnancy and Subacute Bacterial Endocarditis. F. W. Niehaus, Omaha.—p. 219.
Tests of Blood and Urine of Drunken Drivers. D. F. Bavis and M. F. Arnholt, Lincoln.—p. 220.

Northwest Medicine, Seattle

38: 193-232 (June) 1939

Socialized Medicine in Europe a Failure. W. H. Orr, Seattle.—p. 197.
Hepatolenticular Degeneration (Wilson's Disease): Report of Case with Autopsy Findings. W. L. Lidbeck, Salem, Ore., and C. P. Larson, Fort Steilacoom, Wash.—p. 201.
Tonic Pupils and Absent Tendon Reflexes (Adie's Syndrome): Report of Two Cases. C. A. Veasey Sr., Spokane, Wash.—p. 204.
*Nutrition and Night Blindness. I. A. Manville, Portland, Ore.—p. 208.
Early Diagnosis of Cancer of Gastrointestinal Tract and the Gruskin Malignancy Test. S. Tashian, Seattle.—p. 214.
Analgesia and Anesthesia in Obstetrics. S. S. Jones, Tacoma, Wash.—p. 218.
Hereditary Pseudohemophilia. C. G. Bain, Centralia, Wash.—p. 221.

Nutrition and Night Blindness.—According to Manville, night blindness occurs not only in vitamin A deficiency but also in diseases of the eye such as glaucoma, choroiditis, optic neuritis, toxic amblyopia, pigmented retinitis and detachment of the retina. He presents the results obtained by various investigators in the measurement of night blindness and from these figures it is seen that from 20 to 40 per cent of the population are suffering from various degrees of night blindness. Much has been said about night blindness as a cause of accidents and the author mentions another important phase of night blindness in relation to the increasing number of traffic accidents. This has to do with the pedestrian and not the driver. Observations in Portland indicate that a large majority of pedestrians killed by automobiles are 50 years of age or older. It is just as likely or even more probable that an individual in this age group, in contrast to drivers as a group, will be suffering from vitamin A deficiency and consequently night blindness. Certainly cirrhosis of the liver and perhaps other pathologic changes occurring in the liver among the aged is of far greater frequency than among younger people. This would predispose to a vitamin A deficiency.

Pennsylvania Medical Journal, Harrisburg

42: 1009-1136 (June) 1939

Treatment of Meningitis. Josephine B. Neal, New York.—p. 1019.
The State Medical Society's Contribution to Cancer Control. D. W. Thomas, Lock Haven.—p. 1028.
Intestinal Obstruction as Complication of Baldy-Webster Uterine Suspension Operation. E. A. Schumann and C. T. Beecham, Philadelphia.—p. 1032.
Hospital Pathologic Laboratories and the Pathologist. J. W. McMeans, Pittsburgh.—p. 1035.
Nephrotic Stage of Glomerulonephritis. F. J. Gregg, Pittsburgh.—p. 1039.
Diverticulitis of Colon: Diagnosis and Medical Treatment. O. H. P. Pepper, Philadelphia.—p. 1043.
Treatment of Children in Foster Homes. J. P. Scott, Philadelphia.—p. 1047.
Management of Regional Ileitis and Certain Other Ulcerative Lesions of Intestines. J. E. Rhoads, Philadelphia.—p. 1050.
Relationship Between the Physician and the Maternity Service of a Hospital in Management of Toxemias of Pregnancy. J. J. Kocyan, Wilkes-Barre.—p. 1054.
Gastric Secretion as Related to Chronic Cholecystitis. R. D. Donaldson, Kane.—p. 1058.

Review of Gastroenterology, New York

6: 160-280 (May-June) 1939

Some of Technical Radiologic Advances in Gastro-Enterology, with Some Comments on Roentgentherapy in Gastro-Enterology. G. E. Pfahler, Philadelphia.—p. 160.
Duodenal Ulcer with Hemorrhage Complicated by Jaundice: Case. H. Parks and R. Fitz, Boston.—p. 179.
Management of Hemorrhaging Peptic Ulcer. J. R. Nakada, St. Louis.—p. 186.
Benign Ischochymia Due to Duodenal Ulcer with Pylorospasm: Report of Case. M. Einhorn, New York.—p. 192.
*Gastrointestinal Symptoms Simulating Ulcer in Chronic Carbon Monoxide Poisoning. H. G. Beck, Baltimore.—p. 196.
Treatment of Chronic Peptic Ulcer. S. Cytronberg, Warsaw, Poland.—p. 207.
Present Status of Treatment of Cancer of Stomach: A Stock-Taking. J. D. Rives, New Orleans.—p. 216.
Regional Enteritis: Acute Phase. E. P. Lehman, University, Va.—p. 222.
Use of Insulin in Malnutrition Due to Nervous Dyspepsia. H. Blotner, Boston.—p. 234.
Quantitative Cholinesterase Determination and Its Potential Significance: Preliminary Report. H. M. Eberhard and W. S. Silverman, Philadelphia.—p. 239.
Possible Respiratory Origin of Pathogenic Types of Staphylococci and Streptococci in Bile Cultures. G. H. Chapman and A. F. Griffiths, New York.—p. 243.
Employment of Immune Depots from Syphilis-Immunized Animals in Therapy of Syphilis. G. Kertész, Ujpest, Hungary.—p. 246.
Electrotherapy in Relief of Biliary and Digestive Disorders. W. T. Johnson, Philadelphia.—p. 249.
Review of Value of Serum Phosphatase in Diseases of Liver. T. Meranze, D. R. Meranze and M. M. Rothman, Philadelphia.—p. 254.

Carbon Monoxide Poisoning Simulating Ulcer.—Beck points out that Bulletin 582 of the United States Bureau of Labor Statistics lists eighty-one occupations in which workmen are exposed to the danger of carbon monoxide. This list does not include exposure incident to the domestic use of gas and oil or that due to riding in closed motor vehicles, 5 per cent of which have been found to contain dangerous amounts of carbon monoxide because of defective engines and exhausts. The author limits his discussion almost exclusively to the gastrointestinal aspects of chronic carbon monoxide anoxemia with special emphasis on a syndrome closely simulating peptic ulcer. Chronic carbon monoxide anoxemia may be clinically divided into simple anoxemia (without any demonstrable tissue changes) and hematologic, cerebrospinal, cardiovascular, respiratory, urogenital and gastrointestinal anoxemia in which definite morphologic changes occur. In a group of 140 individuals studied clinically with daily exposure to varying amounts of carbon monoxide over considerable periods of time, gastrointestinal symptoms were frequently manifested. Statistics show that nearly twice as many workmen employed in gas plants become ill as those engaged in occupations not involving exposure to carbon monoxide and that the incidence of gastrointestinal diseases is two and a half times greater in the first group than in the second. The chief symptoms were anorexia, nausea, vomiting and abdominal pain. The pain was either localized in the midepigastric area or diffused throughout the entire abdomen. In some instances it was dull and aching in character, in others sharp, cramplike and spasmodic. The latter was frequently associated with cardiospasm or pylorospasm. In several instances it was due to enterospasm or anospasm.

Certain patients without demonstrable lesions gave a history suggestive of peptic ulcer including chronicity, periodicity and rhythmicity of symptoms with food ease, hunger pain, pylorospasm and a tendency to bleed. The condition cannot readily be differentiated from peptic ulcer clinically, as hemorrhage, pylorospasm and filling defects may occur in both. The history of exposure to carbon monoxide and the prompt relief of all symptoms incident to a change to a pure atmospheric environment without specific ulcer treatment should exclude the latter. The subject needs further clinical investigation. Seven cases are reported which direct attention to the problem, which heretofore has not been generally recognized and one which has not been satisfactorily solved. It unquestionably is responsible for frequent errors in diagnosis. The gastrointestinal manifestations of chronic carbon monoxide poisoning should not be regarded as a clinical entity but rather as a syndrome developing from a state of chronic anoxemia. This conception is based on the knowledge of the effect of carbon monoxide in producing, through oxygen deprivation, either functional impairment or actual organic changes in the different organs of the body. The lesions produced, which are chiefly vascular, may cause symptoms simulating other diseases besides peptic ulcer. Thus in the central nervous system symptoms of epilepsy, chorea, encephalitis and multiple sclerosis have been observed, and in the cardiovascular system angina pectoris, coronary thrombosis, infarction and myocardial degeneration have been observed.

Southern Medical Journal, Birmingham, Ala.

32: 565-678 (June) 1939. Partial Index

Acetabuloplasty for Dislocation of Hip. I. W. Nachlas, Baltimore.—p. 565.
Cysts of Semilunar Cartilages. I. S. McReynolds, Houston, Texas.—p. 571.
Polypous Cervical and Vaginal Hyperplasias in Association with Pregnancy. W. O. Johnson, Louisville, Ky.—p. 577.
Undescended Testes, with Special Reference to Torek's Type of Orchiopexy. D. C. Donald, Birmingham, Ala.—p. 584.
Clinical Experiences in Treatment of Meningococcemia and Meningococcic Meningitis: Analysis of 118 Cases Treated with Four Different Methods of Treatment. W. A. Clyde and M. G. Neely, Fairfield, Ala.—p. 594.
Treatment with Sulfapyridine of Fifty Patients with Pneumococcic Lobar Pneumonia. R. H. Williams and H. J. Morgan, Nashville, Tenn.—p. 601.
*Sulfanilyl-Sulfanilamide Therapy in Sulfanilamide-Resistant Gonorrhea. E. P. Alyea and W. E. Daniel, Durham, N. C.—p. 608.
Hospital Exposure to Common Contagious Diseases of Children. F. C. Neff, Kansas City, Kan.—p. 623.
*Causes of Colonic Cancer: Clinical Support of Current Hypotheses. J. A. Bargen, Rochester, Minn.—p. 627.
Cancer of Rectum. W. K. McIntyre, St. Louis.—p. 632.
Allergic Rhinitis. E. H. Jones, Vicksburg, Miss.—p. 647.
Injuries to Extremities. G. O. Eaton, Baltimore.—p. 663.

Treatment of Sulfanilamide-Resistant Gonorrhea.—Alyea and Daniel used sulfanilyl-sulfanilamide in forty cases of gonorrhea resistant to sulfanilamide; twenty-two were cured promptly; five were improved and in thirteen no improvement occurred. The dosage was approximately 3 Gm. daily for from ten to fourteen days. Experimentally the toxicity of sulfanilyl-sulfanilamide is less than sulfanilamide and the patients tolerated it more easily. Acute hemolytic anemia or granulocytopenia did not occur following treatment with sulfanilyl-sulfanilamide, nor were there any serious toxic manifestations involving the hematopoietic system. Peripheral neuritis was encountered only once and the etiologic factor in this instance was questionable.

Causes of Colonic Cancer.—Bargen tries to substantiate some of the features of current hypotheses concerning the nature and pathogenesis of cancer. It is generally accepted that the single cancers of mucous surfaces are in the nature of anarchic cell masses originating from a single cell which began its career by a wholly useless and purposeless division and the new cells resulting from it carried on in the same manner. Such cell masses grow rapidly, destroy the surrounding tissues of the host, spread to distant parts and, by sapping the vitality of the patient, finally destroy him. Such cell masses may originate in different parts of the same organ or even different organs of the same person. These facts would suggest that the normal metabolic processes of growth are in constant conflict with some pernicious cellular degenerative process which tends to gain the upper hand with advancing years. In the tissues of some families this conflict is probably keener and an inherent susceptibility to a weakness in some tissues may exist. This is well illustrated by members of one family in which cancer appears at the same site and at the same time of life. Among the factors which tend to initiate these unnatural processes of growth, the major roles seem to be held by trauma, irritation and infection. All three of them probably come into play in the production and healing of the lesions of a disease such as chronic ulcerative colitis. It is not inconceivable that here the mechanism of normal healing has lost control and the anarchic processes have the upper hand.

Southern Surgeon, Atlanta, Ga.

8: 191-268 (June) 1939

Tuberculosis of Breast: Report of Six Cases. A. E. Grimes and F. M. Massie, Lexington, Ky.—p. 191.
Postoperative Pneumothorax: Report of Case Following Partial Gastrectomy. L. S. King, Philippi, W. Va.—p. 206.
Renal Tuberculosis. J. A. Bowen, Louisville, Ky.—p. 216.
Few Aids in the Operating Room. C. C. Howard, Glasgow, Ky.—p. 227.
*Use of Nicotinic Acid in Idiopathic Pruritus Vulvae. M. Y. Dabney, Birmingham, Ala.—p. 232.
Mesenteric Cysts. J. W. Snyder, Miami, Fla.—p. 240.
Carcinoma of Breast. H. H. Trout, Roanoke, Va.—p. 249.

Nicotinic Acid for Pruritus Vulvae.—Dabney used nicotinic acid in the treatment of eight women with pruritus vulvae of unknown etiology. Four of the women were relieved. Two of them also had pruritus ani which was relieved. The pruritus of the four patients who were not relieved was somewhat more severe and its duration was distinctly longer than in the patients who obtained relief. The average duration of the condition in the women who were benefited was fourteen months, whereas the others had suffered for an average of almost six years. Since nicotinic acid, though synthetically made at the present time, is merely a vitamin and a member of the B group, relief from pruritus vulvae through its use should be temporary unless repeated. Hence, after the therapeutic test has determined its need, a well balanced, high calory diet, especially rich in vitamin B, is indicated. Two of the successfully treated patients had subsisted principally on starchy foods and with but little animal protein. The diets of the unsuccessful group varied from fair to good. No patient with pruritus vulvae should receive this treatment until a most careful study has ruled out such etiologic factors as pediculosis pubis, diabetes, the fungoid dermatoses, trichomoniasis, gonorrhea, infestation with Monilia albicans and certain allergic states. The author believes that the dose of nicotinic acid, 100 mg. three times a day after meals, that he used was far too large and that it caused several unpleasant though harmless reactions. He is going to use 20 mg. three times a day and this amount will be increased only when deemed necessary.

Tennessee State Medical Assn. Journal, Nashville

32: 151-186 (May) 1939

Urinary Infections. T. R. Barry, Knoxville.—p. 151.
Gangrene of Penis: Report of Case. J. A. Conroy, Gatlinburg.—p. 155.
Metrazol Therapy. B. F. Peterson, Knoxville.—p. 159.
Adult Intussusception. C. M. Miller, Nashville.—p. 163.

32: 187-226 (June) 1939

Acute Intussusception in Infancy. P. C. Elliott, Nashville.—p. 187.
Statement Submitted to the Subcommittee of the Senate Committee on Education and Labor on S. 1620. J. G. Crownhart, Madison, Wis.—p. 192.
Diffuse Glomerulonephritis in Various Stages. D. Scheinberg, Memphis.—p. 199.
Benign Uterine Papilloma with Associated Myosarcoma. J. C. Mobley Jr., Memphis.—p. 211.

Wisconsin Medical Journal, Madison

38: 433-512 (June) 1939

Migraine. W. C. Alvarez, Rochester, Minn.—p. 451.
Gonadotropic Hormone in Testicular Tumor. Jane Read, Madison.—p. 456.
Nonvenereal Suppurative Lesions of the External Genitalia. S. J. Silbar and N. Enzer, Milwaukee.—p. 459.
Equine Encephalomyelitis in Man: Report of Three Questionable Cases. B. F. Johnson, Mondovi, and L. M. Morse, Neillsville.—p. 464.
Physical Therapy in General Practice. J. S. Coulter, Chicago.—p. 466.
Allergy as Related to Otolaryngology. J. A. Hurlbut, Madison.—p. 471.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1: 907-962 (May 6) 1939

Experimental Observations on Headache. G. W. Pickering.—p. 907.
Pelvic Disproportion Treatment. J. M. M. Kerr.—p. 912.
Hematemesis and Melena: Observations on Use of Continuous Drip Transfusions. F. A. Jones.—p. 915.
Mortality of Children in England and Wales and Germany: Statistical Comparison. G. Tugendreich.—p. 918.
*Relation of Vitamin D and Mineral Deficiencies to Dental Caries. G. F. Taylor and C. D. M. Day.—p. 919.

Vitamin D, Mineral Deficiencies and Dental Caries.—Taylor and Day determined the vitamin D deficiencies and dental caries in ten cases of severe clinical rickets, with x-ray confirmation. A diet and health survey of the Kangra District of the Punjab recently carried out by the public health department has shown a high incidence of rickets and osteomalacia and definite vitamin D, calcium and phosphorus deficiencies in the diet of most of the population. Fifty children with rickets were examined clinically and dentally. A low incidence of dental caries and hypoplasia was observed. Ten of these children were examined roentgenologically, the teeth of four of these had no caries, and in the six other children a total of fourteen cavities were found. There were in the group ninety-six temporary teeth and 135 permanent teeth. Two cavities were found in the ninety-six temporary teeth and twelve cavities in the permanent teeth. The diet of these children consists mainly of carbohydrates with relatively small proportions of protein and fat. Meat and fruits are almost entirely absent from the diet. Small quantities of milk and vegetables are consumed. Sugar is rarely eaten. Only two meals are eaten daily, of rice and "chapatti." Rickets and osteomalacia are very common in the population. On the basis of the investigation the authors conclude that vitamin D deficiency alone does not cause either dental caries or hypoplasia of the teeth. Both the teeth and the jaws of this group of children were excellently formed. This low incidence of caries with excellent teeth and jaw formation is evidently characteristic of the peasant of the Punjab. In another investigation of 800 school children, made in the city of Lahore, of the Indian "middle class," having a diet more in keeping with European standards, including soft refined carbohydrates and sugar, eaten three or four times daily, the incidence of caries was much higher than in the rickets cases. An average of six cavities per child was tabulated for the 800 children. In another group of twenty-six poor Indian children in an orphanage in Lahore, consuming a diet resembling that of the Kangra children, the incidence of caries was 2.27 cavities per mouth. Eight of the twenty-six children had no caries. The low caries incidence of children in the Kangra District and in the orphanage together with the physical nature of the food eaten lends support to the "detergent diet" theory of Wallace, which postulates that the physical nature and cleansing action of the diet is of more importance than other factors in the prevention of dental caries. Furthermore, sepsis and the exanthems of childhood would seem to be more potent factors in the causation of hypoplasia and caries than vitamin D and mineral deficiencies.

Glasgow Medical Journal

13: 205-256 (May) 1939

Visual Perception. W. J. B. Riddell.—p. 205.
Method of Treating Fractures of the Spine, with Eight Case Records. A. M. Murray.—p. 217.

Indian Journal of Medical Research, Calcutta

26: 851-1068 (April) 1939. Partial Index

Differential Isolation of Vibrio Cholerae. W. D. B. Read.—p. 851.
Longevity of Coliform Organisms in Water Stored Under Natural Conditions. T. N. S. Raghavachari and P. V. S. Iyer.—p. 877.
Effect of Tryptic Digestion on Toxicity and Antigenicity of Tetanus Toxin-Broth. D. C. Lahiri.—p. 889.
Diet Survey of Families with Leprosy. W. R. Aykroyd and B. G. Krishnan.—p. 897.
Lead in Human Tissues. K. N. Bagchi, H. D. Ganguly and J. N. Sirdar.—p. 935.
Action of Leukopoietic Drugs. C. R. Das Gupta.—p. 947.
Study of Anemia Affecting Laborers on Assam Tea-Estates: Parts I to V. G. Macdonald.—p. 1001.

Indian Medical Gazette, Calcutta

74: 193-256 (April) 1939. Partial Index

Experimental Production of Syndrome of Epidemic Dropsy in Man. R. N. Chopra, C. L. Pasricha, R. K. Goyal, S. Lal and A. K. Sen.—p. 193.
Comparative Value of Oil of Chenopodium and Tetrachlorethylene as Anthelmintics for Use in Mass Treatment. K. P. Hare and S. C. Dutta.—p. 198.
*Sulfapyridine (2-Sulfanilylamino-Pyridine) in Ape Malaria. R. N. Chopra and B. M. Das Gupta.—p. 201.
Chemotherapy of Gonorrhea and Other Minor Venereal Diseases with Sulfanilamide Compounds: Clinical Study. R. V. Rajam, P. N. Rangiah and T. Masilamani.—p. 202.
Observations on Some Immunologic Aspects of Leptospiral Infections. B. M. Das Gupta.—p. 220.

Sulfapyridine in Ape Malaria.—From the experiments on three monkeys (Silenus rhesus) Chopra and Das Gupta find that, unlike other sulfanilamide compounds, sulfapyridine is capable of destroying the monkey plasmodium (Plasmodium knowlesi) in dosage which is even less than what is regarded as the proportionate dose for a monkey as compared with that of man. Once the parasites disappear, after treatment for five days they do not appear again in the peripheral blood, at least not in sufficient numbers to be detected in thick films. This is different from what happens after treatment of Plasmodium knowlesi infection with atabrine. Although atabrine exerts a powerful action on this infection, the parasites almost invariably reappear in from ten to fifteen days and multiply with the same rapidity as in the primary attack, causing the death of the animal if prompt treatment is not instituted. In view of the encouraging results obtained with this drug in monkey malaria, the authors believe that sulfapyridine is well worth trying in human cases of malaria.

Irish Journal of Medical Science, Dublin

No. **160:** 145-192 (April) 1939

Treatment of Buccal Carcinoma. O. Chance.—p. 145.
Surgical Treatment of Lymphatic Fields in Buccal Carcinoma. F. J. Morrin.—p. 157.
Endemic Goiter Incidence in County Tipperary. M. Naughten and J. C. Shee.—p. 164.
Iodine Metabolism in Graves' Disease. J. C. Shee.—p. 167.
Some Recent Advances in Our Knowledge of Graves' Disease. J. C. Shee.—p. 169.
Treatment of Uterine Prolapse. R. E. Tottenham.—p. 173.
Abdominal Pregnancy at Term: Case. R. M. Corbet.—p. 176.

Journal of Physiology, London

95: 345-430 (April) 1939. Partial Index

Reflex Response of the "Apneustic" Center to Stimulation of the Chemoreceptors of the Carotid Sinus. G. Stella.—p. 365.
Effect of Variations in Carbon Dioxide Tension on Rate of Absorption of Saline Solution from Subarachnoid Space. T. H. B. Bedford.—p. 373.
Surface Tension and Absorption Spectrum of Female Urine Over a Menstrual Cycle. W. T. Earlam and R. A. Morton.—p. 404.
Capacity of Pituitary Preparations Containing Thyrotrophic Hormone to Induce Formation of Antiserums. I. W. Rowlands and F. G. Young.—p. 410.
Pharmacologic Actions of Diethyl Stilbestrol and Other Estrogenic and Nonestrogenic Substances. R. F. Dawson and J. M. Robson.—p. 420.

Lancet, London

1: 1023-1082 (May 6) 1939

The Microglia. Pio del Rio-Hortega.—p. 1023.
Infantile Diarrhea. J. M. Smellie.—p. 1026.
Hemorrhage in Jaundice. C. F. W. Illingworth.—p. 1031.
*Sodium and Chlorine Retention Without Renal Disease. E. N. Allott.—p. 1035.
*Trendelenburg's Operation for Pulmonary Embolism: Successful Case. I. Lewis.—p. 1037.

Sodium and Chlorine Retention Without Renal Disease.—During the last few years Allott encountered five patients not suffering from renal disease in whom a high level of sodium and chlorine was found in the blood. All the urines showed extremely low sodium and chlorine, with high concentrations of potassium, phosphate, sulfate and urea; all were strongly acid, even in the patient who was suffering from alkalosis. Except in this last case there was no evidence of disturbance of the usual acid-base relationships in the serum. The fairly close agreement between the values for total fixed base and total determined acids shows that there is no accumulation of "undetermined acids" such as occurs in uremia due to chronic nephritis. The kidneys in general showed normal glomeruli, apart from slight focal ischemic fibrosis, but some

showed tubular degeneration. The mechanism by which this condition originates is not clear. All the patients, it is true, showed to some extent the clinical symptoms of dehydration, but in most patients with dehydration this accumulation of sodium and chlorine in the blood is not observed. All the patients, except one whose brain was not examined at post-mortem, had a lesion in the central nervous system. The lesions were varied in nature and distribution and it is difficult to find any factor common to them all. The explanation seems to be that either the tubules handle chloride and sodium in a similar manner to dextrose and reabsorb a certain maximal quantity per unit of time, whatever the level in the blood, or that there is some abnormality in the nervous or endocrine influences acting on the kidneys.

Trendelenburg's Operation for Pulmonary Embolism.—Lewis describes the first successful pulmonary embolectomy in Britain, being the twelfth in the world literature. Apart from its interest as a Trendelenburg embolectomy, the case presented a series of complications almost any of which might have proved fatal of itself in such a dangerously ill patient. The complications were (1) pronounced cerebral symptoms—prolonged unconsciousness, clonic convulsions, amaurosis, deafness and psychologic changes, (2) a second embolism, (3) suppurative mediastinitis and pericarditis treated by drainage and chemotherapy, (4) hemorrhagic pleural effusion which later became an empyema, (5) massive necrosis of the buttocks and (6) the scalenus anticus syndrome. All these conditions were duly overcome.

Medical Journal of Australia, Sydney

1: 565-600 (April 15) 1939

After Sixty Years. G. M. Barron.—p. 565.
Etiology of Chronic Nephritis in Childhood. H. J. Sinn.—p. 572.

1: 601-636 (April 22) 1939

Acute Glaucoma: Its Nature, Diagnosis and Immediate Treatment. G. Appel.—p. 609.
Mixed Tumors of Uterus. A. R. H. Duggan.—p. 612.

Quarterly Journal of Medicine, Oxford

8: 79-184 (April) 1939

Benign Bronchopulmonary Inflammations Associated with Transient Radiographic Shadows. H. Ramsay and J. G. Scadding.—p. 79.
Hereditary Ectodermal Dysplasia of Anhydrotic Type. P. C. C. de Silva.—p. 97.
*Secretin Test of Pancreatic Function. H. Lagerlöf.—p. 115.
Sternal Puncture in Diagnosis of Diseases of Blood-Forming Organs. R. B. Scott.—p. 127.
*Agglutination of Suspensions of Virus-like Particles Prepared from Exudates in Acute Rheumatic Fever. G. H. Eagles and W. H. Bradley.—p. 173.

Secretin Test of Pancreatic Function.—Lagerlöf points out that an absolute condition for a reliable secretin test is the complete separation of gastric and duodenal secretion. A further condition is the complete recovery of the whole juice secreted. This technical problem has been solved by means of a special double tube and continuous separate delivery of the juices of the stomach and the duodenum as well as the saliva. One bore of the tube ends in the stomach, the other in the duodenum. Each one has several holes in its terminal portion, except for the 3 inches of the duodenal tube which occupies the pyloric region. By this procedure the recovery of the juices is complete and reliable. Immediately after intravenous injection of secretin, an abundant flow of pancreatic juice occurs. The volume of pancreatic juice is directly proportional to the amount of secretin injected. Three different mechanisms cooperate in the stimulation of the pancreas: (1) stimulation by secretin, (2) vagal stimulation and (3) stimulation by the split products of digestion. For the diagnostic test the volume collected in one hour is used. Bicarbonate, diastase, trypsin and lipase are determined. When the course of an acute pancreatitis is followed by repeated secretin tests, the volume of juice and the amounts of bicarbonate may remain normal throughout the disease, while during the acute stage the enzymes are depressed but later, during convalescence, return to normal. Among the enzymes the diastase may approach zero while the trypsin remains within normal limits. This is referred to as type 1 disturbance. Another pathologic group may show a correlated diminution of all pancreatic functions. This is referred to as type 2 disturbance. Combinations of both types may exist. Type 1 is characteristic of acute pancreatitis. The functional disturbance is reversible and in most cases recovers completely. The pathologic basis for the disturbance probably need not be more grave than toxic-inflammatory edema. Type 2 disturbances may occur in any disease of the pancreas, rarely in acute pancreatitis. The simplest interpretation of this disturbance is a reduction in amount of functioning pancreatic tissue, diffuse or regional. There may be destruction of pancreatic cells from different causes (cirrhosis, necrosis or carcinoma) or obstruction of pancreatic ducts (by edema, tumor or calculus). The practical diagnostic value of the secretin test is demonstrated by the distribution of the amounts of bicarbonate in forty-one normal subjects, compared with twenty-five patients with pancreatitis, three with pancreatic calculi and four with cancer of the pancreas. The normal bicarbonate elimination during sixty minutes, following the intravenous injection of the standard dose of secretin, presents a mode of 150 cc. of tenth normal bicarbonate solution. The demarcation between low normal values and pathologic subnormal values is definite. A tendency toward subnormal values is clearly demonstrated in the pathologic material. Secretin tests have been done on twenty-two diabetic patients. Two had pancreatic calculi, one cancer of the pancreas and one a very severe acute pancreatitis. Of the remaining eighteen, none had any other sign of pancreatic disease than the diabetes. These patients had a lower average bicarbonate elimination than normal, in ten the amounts were significantly lower, in three the values were on the borderline of normality. The diastase elimination resembled the bicarbonate. Eight patients showed definitely subnormal values, five borderline values. The low values of diastase do not depend on elevated blood sugar levels.

Agglutination of Virus-like Particles.—Eagles and Bradley tested the serums for agglutination in eighteen cases of rheumatic fever, twenty cases of arthritis of the rheumatoid type and sixteen cases of arthritis of the rheumatoid type of known etiology (i. e., gonococcic and pneumococcic arthritis), gout or joint disease not of the rheumatoid type. Serum was obtained by the usual method, stored at 4 C. and used for agglutination tests as soon as possible. To avoid lipoid in the serum, blood was taken between 10 a. m. and the noon meal. Agglutination was not confined to serums from rheumatic fever and rheumatoid arthritis but occurred with serums from the sixteen cases of other arthropathies in which any relationship to true rheumatism was remote. There is no significant difference in the occurrence of agglutination in any of the three types of serums. Agglutination tended to occur most frequently in serums taken during the active phase of acute rheumatic fever and acute rheumatoid arthritis but was by no means so limited. Agglutination was not confined to the phase of recovery but occurred during other phases as well, making it impossible to draw any definite conclusion that agglutination and clinical episodes are intimately related. Elementary body agglutination did not depend on the presence of Streptococcus pyogenes in the throat, nor did it necessarily occur after acute infection with Streptococcus pyogenes even when an attack of acute rheumatism was unquestionably related to the throat infection. In one instance, however, the simultaneous appearance of the ability of the serum to agglutinate rheumatic suspension at the onset of rheumatic fever following an acute infection of the throat was particularly striking. No reason for this in this single case is offered. Intercurrent Streptococcus pyogenes episodes were observed during hospitalization in six of the fifty-four cases studied. The streptococcic immunologic observations in all six patients were undoubtedly influenced by these infections. Three of these had acute rheumatic fever (in two of which acute exacerbations of rheumatism developed subsequently), one had focal arthritis and two had other arthropathies. Assuming elementary body agglutination and antistreptolysin to be unrelated, the calculated expectation in the present series is that thirty of any 110 samples would show no evidence of streptococcic infection. There is, therefore, no evidence for a specific causal relationship between agglutination of rheumatic elementary body suspensions and streptococcic infection. There is no evidence that agglutination is dependent on or influenced by conditions governing increased sedimentation rate or pyrexia. This confirms the earlier observations of other investigators.

Annales d'Endocrinologie, Paris

1: 1-128 (March) 1939

*Surgical Treatment of Diabetes by Biliary Deviation. R. Leriche and A. Jung.—p. 3.
Interaction of Hypophysis and Gonads on Plumage. C. Champy.—p. 13.
Moon Faces. E. May and P. Mozziconacci.—p. 28.
Gonadotropic Hormones: Critical Study of Some Points Relative to Their Role in Physiology and Pathology of Ovarian Functions. S. Aschheim, L. Portes and M. Mayer.—p. 42.
Action of Testosterone and Its Esters on Genital Tract of Mammalian Females and of Women. J. Varangot.—p. 55.

Surgical Treatment of Diabetes by Biliary Deviation.—Leriche and Jung say that in the course of experiments carried out previously on the deviation of the bile they were surprised to find on microscopic examination of the pancreas that the endocrine cells appeared to be more numerous, more distinct, heavier and more active. Starting from that, they decided to make new studies on biliary deviation with respect to the problem of insulin. They produced total deviation of the bile in seventeen adult dogs. They sectioned the choledochus, ligated the inferior end and into the superior end introduced a small glass cannula mounted on a short india rubber drain. When the choledochus was too thin to lend itself to this, it was tied and the cannula was fixed into the gallbladder. The inferior end of the drain was introduced into the bladder. Studies were made on the blood sugar. The dogs died or were killed after from six days to four months. Microscopic studies on the pancreas revealed that the endocrine cells were especially clear; the island presented pronounced vascular congestion and large nuclei of greater than normal density. The authors also describe the history of a woman with diabetes mellitus in whom deviation of the bile was maintained for thirteen months by a fistula with an external opening. In the concluding summary they say that their observations do not justify the recommendation of this form of surgical treatment for patients with diabetes mellitus. Nevertheless, their studies revealed several factors which indicate that the endocrine activation of the pancreas is possible by deviation of the bile. They emphasize the following factors: 1. In animals the biliary deviation leads to microscopic modifications of the pancreas which indicate activation of the endocrine glands and irregular or diminished activity of the exocrine gland. 2. During the biliary deviation the blood sugar content of the animals is generally low. 3. Sugar tolerance tests produce lower blood sugar curves in these animals than in the controls. 4. In the woman whose case history is reported the glycemia during the thirteen months of biliary deviation was maintained at values between 1.67 and 1.95 without having need of insulin, although before the glycemia was 3 in spite of the administration of from 80 to 100 units of insulin daily. The authors think that it would be advisable to study experimentally and clinically a definite deviation of the bile by cholecystojejunostomy. If this procedure is efficacious, it will be more simple than splanchnicotomy, adrenal ablation or denervation of the liver.

Lyon Chirurgical, Paris

36: 257-384 (May-June) 1939. Partial Index

Benign Tumor of Glomus Caroticum. E. Stulz, G. Hoerner and P. Branzeu.—p. 257.
Pathologic Alterations of Meniscuses of Knee and Their Clinical Importance. F. Raszeja.—p. 269.
*Technic of Surgical Treatment of Calculus of Choledochus. L. Gidró.—p. 308.

Surgical Treatment of Calculus of Choledochus.—Gidró does not consider it necessary to open the choledochus in all cases of lithiasis of the gallbladder, but he is in favor of careful examination and frequent exploration by the sound. He recommends exploration by the sound (1) if there are clinical symptoms of occlusion (icterus in the absence of occlusion), (2) if calculi can be palpated in the principal biliary passages, (3) if the choledochus is larger than ordinary, (4) if the choledochus or its surroundings show signs of inflammation, (5) if the cystic duct is so large that passage of the calculus into the choledochus is possible, (6) in cases of acute inflammation of the gallbladder and (7) if the patient had icterus before he had pains. If the principal biliary passages are not detectable, it must be assumed that there are calculi in the choledochus. In the latter case the author recommends retrograde exploration, that is, by way of the duodenum. He does not open the choledochus during exploration but if possible enters the choledochus by way of the cystic duct. The result of the exploration of the choledochus determines the further surgical procedure. In case of negative results, after the cystic duct is cut, it is ligated or sutured and, unless the bile is not infected, cholecystectomy is performed. If calculi are found, it is not by choledochotomy but through the cystic duct with forceps and curet that the author removes the mobile biliary calculi, the great majority of which do not exceed the size of a hazelnut. If the cystic duct is large enough, they can be made to glide out. The author employs this procedure more and more frequently. During 1936-1937 he used it in 55 per cent of the cases of lithiasis of the choledochus. He used exploration by the cystic duct in thirty-eight cases, and in twenty of these cases one or several choledochal calculi could be removed. The advantages of exploration and of lithectomy by way of the cystic duct consists on the one hand in that it makes choledochotomy avoidable and on the other hand in that it is a more aseptic and a shorter operation than is choledochotomy. That lithectomy by way of the cystic duct is not dangerous, the author demonstrates by citing the mortality rates of different operations: 1. Choledochotomy with drainage of the choledochus caused six deaths in thirty-two cases (mortality 18.75 per cent). 2. Choledochotomy with primary suture of the choledochus (choledochorrhaphy) caused four deaths in twenty-two cases (18 per cent). 3. Exploration and lithectomy by way of the cystic duct (transcystic lithectomy) did not cause a single death in thirty-eight cases. The author performs supraduodenal choledochotomy if exploration or lithectomy by the cystic duct is not possible and calculi are found in the hepatic canals. He chooses retroduodenal choledochotomy if a calculus is found in the lower part of the choledochus or at the duodenal papilla. He resorts to transduodenal or intraduodenal choledochotomy if, because of adhesions and cicatrices, the choledochus cannot be found by other means. He drains the choledochus only in the following cases: if before or at the time of the operation there exists septic fever, if the bile contains much pus, if functional examination of the liver indicates grave parenchymal alterations, and finally if apart from the presence of choledochal calculi acute inflammation of the gallbladder exists.

Presse Médicale, Paris

47: 877-892 (June 3) 1939

*Tetanic Anatoxin and Prophylaxis of Tetanus in Man and in Domestic Animals. G. Ramon.—p. 877.
Physiologic and Therapeutic Actions of Cynara Scolymus. L. Tixier.—p. 880.
Chronic Edema of a Lower Extremity. L. Ramond.—p. 887.

Prophylaxis of Tetanus.—Ramon shows that vaccination by means of tetanus toxoid is applied in individual persons and in groups who are especially exposed to tetanic infection. The active immunity engendered by the toxoid of tetanus assures permanent protection against the risks of tetanus, risks which may result either from open injuries or from insignificant wounds the benign character of which does not demand the injection of antitetanic serum, or finally from the existence of tetanigenous foci which give no sign of their presence. The diffusion of antitetanic vaccination can be greatly facilitated by associated vaccinations which make it possible to unite tetanus toxoid with one or several vaccines that are already in current use, for example, diphtheria toxoid or antityphoid vaccine. The vaccination by tetanus toxoid according to the formula of associated vaccinations provides the most favorable conditions for the systematic prophylaxis of tetanus in the individual as well as in groups. In the French army this method has been employed for several years and it is being adopted in other armies as well. The practice to vaccinate domestic animals, particularly horses, with tetanus toxoid has provided the opportunity to furnish the indisputable proof of the efficacy of this vaccination. Since 1927 extensive use has been made of this method of prophylaxis on the horses of the French army and as a result tetanus has disappeared. A single, nonfatal case was observed during 1937. On the basis of information

obtainable so far, vaccination with tetanus toxoid seems to be the method of choice for the prophylaxis of tetanus in human subjects and in domestic animals susceptible to this toxi-infection.

Revue de la Tuberculose, Paris

5: 521-640 (May) 1939. Partial Index

Tuberculosis, Menopause and Castration. Pierre-Bourgeois, Mme. M. Bouquet-Jesinsky and J. Levernieux.—p. 546.
*Silicosis in Gold Miners of Gold Mines of Bellière in Maine-et-Loire. R. Amsler and J. Cady.—p. 580.
Rapidly Fatal Dysphagia by Tuberculous Adneopathy of Mediastinum. Gournay, Busser and Duperrat.—p. 592.
Several Unexpected Results of Phrenicectomy. F. Cordey and M. Jestaz. —p. 611.
Serodiagnosis of Tuberculosis During Preallergic Period. P. Courmont. —p. 614.

Silicosis in Gold Miners.—Amsler and Cady studied the pulmonary aspects of workers in different mines, because in their region not only slate is mined but also ferrous and auriferous ores. Whereas the percentage of free silica in slate is comparatively low (from 6 to 7 per cent), the compact white quartz which constitutes the auriferous veins contains from 60 to 80 per cent of silica and this explains the variety of forms of silicosis that are encountered in the workers who extract and crush or otherwise manipulate the ore. The authors observed the successive pathologic phases of silicosis. Most of the workers who came under their observation on account of silicosis were of the age group between 25 and 40; generally they were robust and had always been in excellent health. The family histories were usually free from tuberculosis. Some had worked in the mines for many years, others only for about five years. Occasionally they came for examination because they had been aroused to the dangers of their occupation by the rapid deaths of some of their co-workers. A man aged 31 had worked in the gold mines for five years and had no symptoms. The pulmonary auscultation and roentgenoscopy revealed nothing abnormal, but roentgenography revealed considerable changes. There was a dissemination of micronodular images in both lungs. The volume of these nodules is slightly greater than that of tuberculous granulations and their opacity is likewise greater. The general aspects of these miliary images give the impression of a snowstorm. The patient had no spontaneous expectoration. Induced expectoration never disclosed tubercle bacilli. The phase of silicosis presented by this patient is the initial one, which may be designated as latent or preclinical. It is demonstrable only by roentgenography. From personal observations the authors conclude that this typical aspect is observable at the end of about five years. Later the subject develops a dry cough or one that is accompanied by mucous expectoration. Sometimes this is associated by emaciation and fatigue and by thoracic pains that are augmented by cough and respiratory effort. The examination with the stethoscope is frequently negative or reveals only the signs of pulmonary emphysema and sclerosis. The disorder may remain in this phase for months and even for years with occasional exacerbations in the functional signs. If the patient stays away from the mine and rests for several months, the development of the silicosis ceases; it is arrested and then it regresses, but the spots in the lungs persist for a long time. In other miners, however, the symptomatology is constant and gradually dyspnea develops; the patient becomes emphysematous and develops cardiac decompensation; he becomes constantly weaker and is hardly able to walk, and the smallest effort is difficult and painful. The auscultation still reveals only emphysema and bronchitis, but roentgenography reveals new nodules, retractile sclerosis and irregular spots. Expectoration becomes more profuse and coughing is persistent. This status represents the pseudotumoral phase of silicosis. The authors describe a case of this type and then discuss the terminal stage with its complications, such as spontaneous pneumothorax, and again relate typical case histories. In the last part of their report they take up the concurrence of silicosis and tuberculosis, pointing out that in some miners they were able to observe the evolution of tuberculosis in silicotic lungs. The tuberculous lesions of gold, iron and slate miners present such characteristic modifications that it may be possible to identify these miners on the basis of the roentgenographic aspect of their thorax.

Schweizerische medizinische Wochenschrift, Basel

69: 445-468 (May 20) 1939. Partial Index

*Epidemic Appearance of Catarrhal Icterus. W. Bloch.—p. 445.
Several Cases of Myiasis Observed in Human Subjects. B. Galli-Valerio.—p. 451.
Quantitative Determination of Vitamin C in Blood of Normal Persons. G. Bajardi and M. Margulius.—p. 452.
Statistics on Goiter in School Children in Canton Berne Before and After Introduction of Iodized Salt. P. Lauener.—p. 455.

Epidemic Appearance of Catarrhal Icterus.—Bloch says that it is well known that the so-called catarrhal icterus occasionally occurs in small epidemics. Reports about such epidemics have appeared especially since the last war. In the literature to which the author had access he found forty reports about such epidemics, in all of which it was possible to exclude Weil's icterogenic spirochetosis. He describes observations that were made in the course of one epidemic which broke out in a work camp of students. Of 115 students twenty-seven, or 23 per cent, developed catarrhal icterus. Further he reviews reports about several other epidemics of catarrhal icterus and discusses the various aspects of the disease. He reaches the conclusion that epidemic catarrhal icterus is an infectious and contagious disease *sui generis*. A causal organism has not been detected as yet, but Leptospira icterohaemorrhagiae can be excluded. The transmission is usually effected by personal contact, less often by drinking water. The period of incubation is from two to four weeks. The clinical course largely resembles that of simple icterus. It could not be proved that an attack of the disorder produces a specific immunity. Epidemic catarrhal icterus appears chiefly during the last part of the summer and during the fall and mostly among groups of children and soldiers. The author considers it possible that sporadic and epidemic catarrhal icterus are identical diseases; there are some relations to yellow atrophy of the liver.

Archivos Argentinos de Pediatría, Buenos Aires

10: 501-622 (May) 1939. Partial Index

*Bronchiectasis in Children. A. Casaubon.—p. 501.
Bronchiectasis with Abscess. A. Segers and A. Russo.—p. 567.

Bronchiectasis in Children.—Casaubon observed twenty cases of bronchiectasis in children. The disease may be either congenital or acquired. In all cases a constitutional hereditary factor and especially the presence of congenital syphilis are important determining factors. A clinical diagnosis is made by (1) the history of the patient (showing repeated or prolonged respiratory infections with bouts or else whooping cough), (2) the results of repeated auscultation (by which wet rales are heard in fixed zones of the lung, especially at the base, and which diffuse during the bouts) and (3) the elimination of abundant expectoration which does not contain tubercle bacilli. The symptoms are acute and similar to those of pneumonia or bronchopneumonia in cases of extended bronchiectasis or during an exacerbation. A simple x-ray examination of the chest may in certain cases be of diagnostic value, by showing a juxtahilar triangular or right angular shadow toward the base, which is frequent (although not pathognomonic of) bronchiectasis. In the presence of bronchopulmonary sclerosis the diagnosis is made by bronchography. The bronchographic images of bronchiectasis may be cylindric, moniliform, finger-like, ampullar, sacciform and in the forms of nests, bunches of grapes and lakes. Cylindric and generalized bronchiectases originate in the bronchial mucosa, whereas ampullar and sacciform bronchiectases are due to retractile sclerosis from lesions of the lung parenchyma, of the pleura or of both structures. The coexistence of bronchiectasis and other malformations of the respiratory tract, as verified by bronchography, indicate the congenital origin of bronchiectasis in the given case. The bronchographic image of the normal respiratory tract is similar to a tree in summer, that of bronchiectasis is similar to a tree in winter (lack of visualization of the alveoli). In cases of agenesis of the small bronchi and of the alveoli the image is that of a pruned tree. The bronchographic aspect of a bronchiectasic abscess of the lung depends on whether the abscess forms before or simultaneously with bronchiectasis. In latent and chronic bronchiectasis in syphilitic or suspected syphilitic patients the administration of antisyphilitic treatment is indicated. A complementary treatment for

syphiltic and nonsyphilitic patients during the latent and chronic stages of the disease consists in giving the patient certain respiratory exercises, living in a dry, warm climate, preventing infections and removing septic (especially buccopharyngeal) foci and foreign bodies if there are any in the respiratory passages. During the bouts the treatment is symptomatic, similar to that which is resorted to in pneumonia and bronchopneumonia and including autovaccines or heterovaccines. The surgical treatment is indicated in acute bronchiectasis, especially when complicated by abscess of the lung.

Archiv. für Ophthalmologie, Berlin

140: 193-444 (April 28) 1939. Partial Index

Clinical and Anatomic Observations in Retinitis Albuminurica. W. Kyrieleis.—p. 193.
Resorption of Dextrose and Ascorbic Acid in Lens. H. K. Müller.—p. 258.
Clinical and Serologic Diagnosis of Gonorrheal Iritis. E. J. Siegert.—p. 303.
Pathology of Lymphangioma of Orbit. Magda Ranót.—p. 328.
*Influence of Dihydrotachysterol on Opacity of Lens During Tetany. W. Rauh.—p. 334.
Rubeosis Iridis Diabetica and Its General Medical Significance. H. Fehrmann.—p. 354.

Influence of Dihydrotachysterol on Lens During Tetany.—According to Rauh it has been demonstrated clinically as well as experimentally that typical forms of gray cataract develop as the result of postoperative and of idiopathic tetany. Holtz's discovery of the therapeutic effect of dihydrotachysterol in tetany raised the question whether the characteristic opacities of the lens as well as the fully developed cataract of the tetany can be influenced by dihydrotachysterol. The author decided to investigate this problem on animals. The course of development of the cataract of parathyroprivic tetany having been thoroughly investigated in rats, he decided to study the effect of dihydrotachysterol in these animals. He reports his observations on seventy-seven animals. Since in young rats the postoperative tetany takes a rather rapid course and the changes on the lenses are especially uniform, he chose animals which weighed less than 100 Gm. The observations on the lens were made with the slit lamp; the dihydrotachysterol was given with the food. Careful records were kept about the quantities of dihydrotachysterol administered to the animals as well as about the condition of the lenses. The author describes and illustrates some of the turbidities of the lens. In the course of three years he studied the effect of dihydrotachysterol under various conditions. He was able to demonstrate that tetany and the lenticular opacities of tetany can be prevented by means of dihydrotachysterol. Moreover, opacities of the lens subside under the influence of dihydrotachysterol until the lens is practically clear again; however, in order to retain this clarity of the lens the medication with dihydrotachysterol must be continued, because after it ceases the opacities return again. The author says that Meesmann's studies on the changes of the lens during hypocalcemia in human subjects correspond to those in animals; however, there is as yet no record of the disappearance of the turbidities in human subjects. Nevertheless the administration of dihydrotachysterol promises a successful prophylaxis of the cataract of tetany. The decision as to what degrees of opacities will be amenable to treatment with dihydrotachysterol will require further observations. The author emphasizes that of course only the cataract of tetany but not that of old age can be treated with dihydrotachysterol.

Münchener medizinische Wochenschrift, Leipzig

86: 681-720 (May 5) 1939. Partial Index

Valvular Lesions of Heart and Pregnancy. G. W. Parade.—p. 681.
Incidence and Significance of Tuberculosis of Hilus Glands in Adults. M. Staemmler and U. Otto.—p. 687.
*Possibilities of Prevention of Arteriosclerosis. W. Raab.—p. 689.
Results of Treatment with Hormones of Gonads. H. Albrecht.—p. 693.
Early Operation of Umbilical Hernia. H. Tomberg.—p. 702.

Prevention of Arteriosclerosis.—According to Raab, necropsies have disclosed signs of beginning arteriosclerosis in a surprisingly large proportion (83 per cent) of persons between 20 and 30 years of age and severe forms of arteriosclerosis in from 21.4 to 36.8 per cent of persons beyond the age of 40. Enumerating the pathogenic factors of arteriosclerosis that are amenable to prophylaxis, the author shows that many of them have one factor in common in that they have some relation to the adrenal function. From the cortical lipoids and from epinephrine the adrenals form a substance which is capable of impairing the arterial walls not only directly by degeneration of the media and loosening of the intima but also indirectly by favoring the deposition of the cholesterols that circulate in the blood. There seems to be a hereditary predisposition to increased production of this factor in the adrenals and to the susceptibility of the vascular walls to its action. The anterior lobe of the hypophysis promotes the function of the adrenals, whereas the gonads have an inhibiting effect. Moreover, it is known that mental strains of various types promote the secretion of epinephrine. Further attention is called to the role of the lipoid content of the food, of the activation of ergosterol by light and of the abuse of nicotine in the pathogenesis of arteriosclerosis. The author stresses that in order to reduce the incidence of arteriosclerosis the following factors deserve attention: 1. The intake of egg yolks, butter fat and animal fats should be limited; that is, these substances should not supply more than from 10 to 15 per cent of the total calories. The diet should consist chiefly of cereals, fruits and vegetables. 2. Abuse of nicotine should be avoided. 3. Attention should be called to the harmful effects of excessive exposure to the rays of the sun. 4. Persons who are especially exposed to arteriosclerosis (those with hypertension, stenocardia, cardiac insufficiency and intermittent claudication) could be subjected to periodic roentgen irradiation of the adrenals and perhaps also of the hypophysis. Moreover, the administration of gonadotropic substance might prove helpful. 5. Marriage between persons with hereditary predisposition to severe arteriosclerosis should be discouraged. 6. Mental strain and excessive excitement should be avoided.

Zeitschrift für Urologie, Leipzig

33: 265-336 (No. 5) 1939. Partial Index

Diagnostic Inadequacy of Elimination of Blue Dyestuff. K. Rittmannsberger.—p. 265.
*Treatment of Vesical Tumors. W. Heckenbach.—p. 268.
Does Mandelic Acid Exert Its Action Only by Acidification of Urine? R. von Werz.—p. 288.
Treatment of Subcutaneous Injuries of Kidneys. E. Müller.—p. 290.
Myiasis of Urinary Passages: Case. H. Junghans.—p. 302.
Chorionepitheliomas of Testes. R. Chwalla.—p. 309.

Treatment of Vesical Tumors.—Heckenbach differentiates between papillary and solid tumors. The papillary tumors may be papillomas or papillary carcinomas, but the clinical course of these two types of tumors does not differ greatly. The author has been able to remove papillary carcinomas by endovesical coagulation. A papillary tumor, no matter whether a papilloma or a papillary carcinoma, provides favorable therapeutic conditions. Both types represent projecting, more or less voluminous tumors that are attached by means of a pedicle, which, whether narrow or wide, involves only the surface; that is, it is limited to the mucosa. Moreover, the papillary tumors do not have a tendency to grow deeper. The author thinks that the decision to resort to endovesical treatment must be based chiefly on the localization and the size of the papillary tumor. It must be possible to remove the tumor entirely and without great damage to the surroundings and particularly to the deeper layers of the vesical wall. Endovesical treatment should be employed only if it promises success. To attempt endovesical treatment and in case of failure resort to opening of the bladder the author regards as inadvisable, because this procedure may lead to unexpected complications. Endovesical coagulation may produce an ulcer that is refractory to all treatment and which often represents the beginning of an infiltrating carcinoma. Thus if there is no hope that a tumor will be completely removed, the method in question is not only unjustified but even dangerous. This applies not only to endovesical coagulation but also to operations with opening of the bladder. In case of small tumors, the surgical opening of the bladder has no advantages over the endovesical procedure; on the contrary, it may lead to dissemination. The papillomas at the internal sphincter are not suitable for endovesical interventions. The author treats these with the same instrument that is used for the electroresection of the prostate. If, in papillary tumors that involve only the mucosa, surgical opening of the bladder is necessary, the operation should be done from the side of

the lumen, for resection of the entire vesical wall is unnecessary in papillary tumors. In cases of solid and infiltrating tumors that involve all layers of the bladder, the endovesical treatment is an inexcusable mistake; in such cases whole sections and surfaces of the bladder must be resected. In their effect on the upper urinary passages, papillary and solid tumors show an entirely different behavior, which, however, is so characteristic for both types of tumors that roentgenologic examination and elimination urography provide valuable diagnostic and therapeutic suggestions. The author found that papillary tumors, even if they are comparatively large, cause insignificant or no changes. He reproduces a roentgenogram of one case in which a giant papillary tumor filled almost the entire vesical lumen. In spite of this large papillary carcinoma the upper urinary passage was unchanged, and complete cure resulted following removal of the growth. Since typical manifestations in the upper urinary passages appear, particularly in case of the infiltrating tumors, at a time at which the instrumental examination provides as yet no insight into the nature of the disease, the x-ray examination facilitates the early diagnosis.

Zeitschrift für urologische Chirurgie, Berlin

45: 1-82 (April 22) 1939. Partial Index

Primary Cortical Noncaseating Chronic Renal Tuberculosis. H. Wildbolz and B. Walthard.—p. 1.
Glandular Therapy in Urology. K. Boshamer.—p. 16.
Final Results of Organ Preserving Operations in Hydronephrosis. E. Wildbolz.—p. 31.
Decapsulation and Blood Perfusion of Kidney Following Poisoning with Mercury Bichloride. F. Linder and H. Sarre.—p. 40.
*Early Recognition of Passive Congestion of Kidney Which Is Caused by Supernumerary Vessels. R. Riester.—p. 49.
Testicular Tumors. E. Dózsa.—p. 60.
Cystometric Technic. O. Povlsen.—p. 72.

Passive Renal Congestion from Supernumerary Vessels.—Riester says that the passive congestion of the kidney which is caused by supernumerary vessels that radiate toward the lower pole and cross and bend the ureter has been a well known clinical entity since its description by Ekehorn in 1907. Most of the reports about this disorder which have appeared since then concerned cases in which the passive renal congestion was completely developed. In these cases usually the renal parenchyma is largely or completely destroyed and the function is impaired to such an extent that the diseased organ must be removed. However, as was pointed out by Ekehorn, the aim should be the early recognition and the prompt removal of the obstruction before a large hydronephrotic sac has developed and while the functional capacity of the kidney is still preserved. The author says that efforts were made at his clinic to detect the disorder in its early stages. In the course of these studies it was found that during the early stages the disorder presents an extremely varied picture; there are no characteristic changes, and intraperitoneal disorders are frequently simulated. At the first appearance of symptoms, neither the urologic nor the x-ray examinations disclose pathologic changes. Systematic observations and the repetition of examinations at certain intervals revealed that a gradually developing passive congestion of the kidney at first can be determined only by x-ray examination. Demonstrable functional impairment appears much later, in a rather advanced stage of the disorder. Only the comparison of several roentgenograms of the renal pelvis made successively at certain intervals make possible a correct interpretation of the slight pathologic changes. The author reports the clinical histories of two patients with passive renal congestion. Both patients complained at first about indefinite abdominal pains. After a time, both had colic-like attacks. Indigo carmine tests of the renal function produced normal results throughout the entire period of observation. The patients were unable to localize the pains and colics. Sinking of the kidney, resulting from loss of fat, caused the ureter to ride on the vessel and later produced bending. To be sure, the presence of a supernumerary vessel is a prerequisite. According to Petren, this is a comparatively frequent anomaly. The severity of the symptoms is dependent on the degree of renal descent. The renal congestion of the first patient was preceded by a considerable loss of weight; the loss of fat of the second patient, a youth aged 19, may have been caused by growth. After describing interesting observations on the roentgenograms of these patients, the author stresses that early recognition and a prompt surgical intervention will not only counteract the symptoms but also preserve the function of the involved kidney.

Novyy Khirurgicheskiy Arkhiv, Dnepropetrovsk

42: 355-480 (No. 168) 1939. Partial Index

*Hydrochloric Acid in Preoperative Cleansing of Cancerous Stomach. S. A. Abramovich.—p. 355.
Head Injuries and Their Treatment. I. I. Bulynin.—p. 363.
Pathogenesis and Histogenesis of Gynecomasty. G. I. Pinchuk.—p. 370.
*Immediate and Late Results of Transplantation of Adrenal Cortex in Fourteen Cases of Addison's Disease. E. M. Auslender.—p. 375.
Surgery of Bichloride Poisoning. B. A. Petrov.—p. 381.
Esophagotomy for Foreign Bodies of Esophagus. I. D. Danilyak.—p. 391.

Hydrochloric Acid in Preoperative Cleansing of a Cancerous Stomach.—According to Abramovich, peritonitis was the cause in 72 per cent of the 132 fatalities following the operation for gastric cancer at the Leningrad Oncologic Institute. Friedrich in 1933 adopted for patients about to be operated on for gastric cancer a method of administering diluted hydrochloric acid and washing the stomachs with 0.25 per cent hydrochloric acid. The author reports a bacteriologic study undertaken to determine the effect of this treatment on the bacterial flora of the gastric contents. Sixty-four patients with gastric achylia about to be operated on for gastric tumor were given a tablespoonful of diluted hydrochloric acid in a glass of cooled boiled water three times daily. Their stomachs were washed daily with large quantities of cooled boiled water followed by from 0.5 to 1 liter of 0.25 per cent solution of hydrochloric acid. These studies demonstrated that the anacid gastric contents of gastric cancer patients are never sterile. The oral administration of diluted hydrochloric acid in the course of several days before the operation destroyed certain types of micro-organisms and diminished the number of colonies of other types. Drinking of the solution combined with the lavage accelerated the cleansing process. The maximum bactericidal effect was accomplished in from thirty to sixty minutes, after which period the bacteria increased in numbers. The author suggests, therefore, that hydrochloric acid lavage be practiced immediately before the operation. While the author realizes that the primary factor in the reduction of the postoperative mortality is the proper choice of operation and adequate technic, he believes that partial reduction of pathogenic micro-organisms of the gastric contents may be regarded as an additional factor in reducing the postoperative peritonitis.

Results in Addison's Disease from Transplantation of the Adrenal Cortex.—According to Auslender, administration of epinephrine in cases of Addison's disease gave no results and frequently failed to raise the blood pressure. Because of dyspeptic disturbances, most patients did not tolerate the feeding of raw adrenal. Administration of adrenal cortex extract was effective in the milder cases as long as it was administered, the symptoms promptly returning on its withdrawal. A number of fatalities are recorded in the literature following both heterotransplantation and homotransplantation of the whole adrenal. Erdheim believed from evidence in one necropsy that the transplanted adrenal of man rapidly underwent necrosis. Believing that necrosis always begins in the adrenal medulla, the author performed twenty-seven transplantations into animals of both the whole adrenal and of the cortex at the same time. The whole adrenal transplants invariably did not take and suppurated, whereas the cortical transplant took and retained its morphology for as long as four or five months. The author reports the immediate and the late results of twenty transplantations in fourteen cases of Addison's disease. The adrenal was removed immediately on the killing of the animal at the abattoir and the cortex was dissected from the medulla in the operating room. Fragments of the cortex were implanted into the subcutaneous tissue of the abdomen. The immediate results were excellent in all of the fourteen cases. The patients exhibited an increase in weight, in the blood pressure, in the blood cholesterol and in the blood sugar, as well as an increase in the muscle power. Nausea, vomiting, diarrhea and low gastric acidity disappeared. The general health was improved to such a degree that patients who were invalids for one to two years were able to resume their occupations. More or less

permanent results were obtained in the mild cases and in the cases of medium severity. The longest period of observation was one year and eight months. In a few cases the improvement was progressive. In the severe cases the improvement lasted from five to six months, after which there was a gradual return of the symptoms, necessitating in from nine to twelve months a second transplantation. These second transplantations gave equally good results. The author concludes that the transplanting of the adrenal cortex is superior to any of the therapeutic measures in Addison's disease.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

83: 1817-1920 (April 22) 1939. Partial Index

Some Remarks on Vesical Fistulas. R. Remmelts.—p. 1819.
Chorioretinitis Juxtapapillaris (Edm. Jensen). R. G. Posthumus.—p. 1825.
Value of So-Called Gonococcic Conglobation Reaction According to R Müller. J. R. Prakken.—p. 1836.
*Death by Hypoglycemia During Treatment with Protamine Zinc Insulin. J. Groen and A. H. Garrer.—p. 1844.

Hypoglycemic Death from Protamine Zinc Insulin.—Groen and Garrer give a detailed clinical history of a woman, aged 27, who had had diabetes since the age of 12 and who had received insulin since the age of 15. When she was admitted to the hospital she was unconscious. She was in the eighth month of pregnancy and it was learned that two weeks before she had been discharged from another hospital, where her insulin treatment had been changed so that one daily injection would be sufficient. At the time of discharge from the hospital she was free from sugar. At 6:30 in the morning she took 12 units of ordinary insulin and 52 units of protamine zinc insulin. After her discharge from the hospital she had several attacks of hypoglycemia. On the day when she was brought to the hospital her husband had left the home at 5:30 a. m. A friend, who called at 8 a. m. to accompany her to the clinic, was not admitted and left without further investigation. The husband, who returned at 6:30 p. m., found his wife unconscious. When the doctor, who was called, learned that the woman had diabetes, he injected 20 units of insulin and then sent her to the hospital. When she arrived, the respiration was not of the Kussmaul type and there was no odor of acetone. The urine, which was obtained by catheterization, did not contain protein, sugar or ketone bodies. The blood pressure and temperature were normal. Diabetic coma and eclamptic coma could be ruled out. While a blood test was being made the patient died and attempts at revival were without avail. The blood was found to contain only 20 mg. of sugar per hundred cubic centimeters. The authors think that it cannot be doubted that death had been caused by hypoglycemia. They stress that attention must be given to the instability of the blood sugar content of pregnant women who receive insulin therapy. They think that during the final months of pregnancy these women should remain in the hospital so that constant supervision is possible. Moreover, protamine zinc insulin should not be given in large doses; they consider quantities exceeding 40 units too large. They also warn against the thoughtless administration of insulin to every unconscious diabetic patient. Insulin should be administered only if symptoms of diabetic coma are actually present, such as Kussmaul's respiration, acetone odor of the breath and presence of sugar and acetone in the urine. As another important factor the authors stress that diabetic patients themselves as well as a person living with them should have some knowledge of the symptoms of hypoglycemia. As far as the authors were able to ascertain, this was the eighth case in which protamine zinc insulin has been either the main or a contributory cause of death.

Nordisk Medicin, Helsingfors

2: 1065-1146 (April 15) 1939

*Clinical-Experimental Studies on Hormonal Regulation of Fat Resorption: Case of Addison's Disease with Change of Fat Tolerance Curve Following Administration of Adrenal Cortex Extract. E. Westerlund.—p. 1065.

Endocrine Regulation of Fat Resorption.—Westerlund believes that insufficiency of the adrenal cortex is a factor in the pathogenesis of the steatorrhea which may accompany Addison's disease. He describes a case in which there were pathologic amounts of fat in the feces. Administration of fat before the start of treatment with adrenal cortex extract showed a low fat tolerance curve. On repeated administration of fat after one injection of the extract and after protracted administration of the extract the fat tolerance curves were considerably higher.

Hospitalstidende

2: 1227-1302 (April 29) 1939

*Continued Studies on Death Due to Asthma. J. V. Jørgensen.—p. 1249.
Acute Asthmatic Attack with Suffocation in Child: Tracheotomy, Bronchial Catheterization. K. H. Køster.—p. 1251.

Death Due to Asthma.—Jørgensen says that in adults fatal asthma manifests itself by predilection in the bronchi, in children in the pulmonary parenchyma, where the predominating change is plasmatic exudation in the alveoli, and that the two types of reactions may be regarded as different manifestations of the same disturbance. In the fatal case reported, in a man aged 44, they appeared side by side. The allergic pulmonary infiltration, the structure of which is unknown, may consist of a massive plasma exudate in the alveoli.

Ugeskrift for Læger, Copenhagen

101: 433-460 (April 13) 1939

*Constriction of Heart. E. Warburg.—p. 433.
Treatment of Hay Fever with Torantil. E. G. Madsen.—p. 441.
Paroxysmal Granulocytopenia (Sundelin). A. Nyfeldt.—p. 443.
Case of Osteomalacia. T. Gimsing.—p. 444.

Constriction of Heart.—Warburg describes five cases of "pure" constrictive pericarditis treated operatively, with good results in three cases and no deaths. He says that the syndrome is rare and the etiology unknown. Rheumatic fever is not believed to be a factor. The most important symptoms are swelling of the veins of the neck, even when the patient is seated, marked increase in venous pressure, stasis of the portal vein with enlargement of the liver and ascites, and in the "pure" cases a small heart. The electrocardiogram was abnormal in eight of the nine cases and seemed to be characterized by inversion of the T deflection. There was low voltage in only two cases. The author asserts that the disorder is probably present in young patients with stasis of the portal vein and increased venous pressure if valvular defects and arrhythmias are excluded, and that diagnosis is simple when this is borne in mind. Establishment of gallop rhythm supports the diagnosis.

101: 461-506 (April 20) 1939

Gonorrhea and Chemotherapy: Review of Present Effectivity of This Method of Treatment. V. Genner.—p. 461.
Treatment of Gonorrhea with Sulfapyridine. A. Reyn.—p. 466.
Id.: Preliminary Report. A. Kristjansen.—p. 472.
*Effect of Sulfapyridine in Type III Pneumococcus Pneumonia. G. Alsted.—p. 474.
Treatment of Pneumonia with Sulfapyridine. P. Hjorth.—p. 477.
Treatment of Pneumonia with Sulfanilylamidopyridine (M and B 693). G. Alsted.—p. 480.
Investigations on Therapeutic Effect of New Injectible Sulfanilamide Preparation (Streptasol). A. Eldahl.—p. 486.
Prontosil Treatment of Pyuria in Children. A. R. Meyer.—p. 488.
Prontosil Treatment of Pyuria in Children. E. E. Fog.—p. 491.
Prontosil Rubrum—Sulfanilamide. H. Askeby.—p. 493.
*Streptococcus Meningitis, Streptamide and Pyriamide (Sulfapyridine). O. Kirstein.—p. 496.

Effect of Sulfapyridine in Type III Pneumococcus Pneumonia.—Alsted says that, of six patients with lobar pneumonia of type III, all but one over 60, treated with a dosage of from 12 to 33 Gm. of sulfapyridine, normal temperature was reached in from three to twenty days. Apart from a slight nausea and vomiting there were no toxic manifestations. Two cases of bronchopneumonia were fatal in spite of treatment with sulfapyridine.

Streptococcic Meningitis, Streptamide and Sulfapyridine.—Kirstein describes the case of a girl, aged 13, in whom a grave acute meningitis, due to nonhemolytic Streptococcus bovis, developed after a lesion of the eye. Intraspinal and oral treatment with sulfanilamide had only a transitory effect. On the thirty-fourth day, when the patient seemed moribund, oral administration of sulfapyridine was begun. In a few days the clinical symptoms of meningitis disappeared, and in five weeks the patient was discharged, apparently well.